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THESIS

PRESCRIBED LOAD LIST CONSOLIDATION INTO
THE FORWARD SUPPORT BATTALION'S
AUTHORIZED STOCKAGE LIST

by

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December, 1997

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ABSTRACT *(maximum 200 words)* The Army has millions of dollars tied up in Class IX inventories at the company level. We describe the costs and benefits of consolidating these inventories within the Forward Support Battalion's (FSB) Assigned Stockage List (ASL). We show that consolidating at the FSB reduces the overall variance in demand for many of the inventory lines and allows the brigade to stock lower quantities of these lines, while maintaining essentially the same service levels. Potential savings to the Army exceed one and a half million dollars for the 3rd Brigade Combat Team alone.

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PRESCRIBED LOAD LIST CONSOLIDATION INTO THE FORWARD SUPPORT BATTALION'S AUTHORIZED STOCKAGE LIST

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Submitted in partial fulfillment of the
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ABSTRACT

The Army has millions of dollars tied up in Class XI inventories at the company level . We describe the costs and benefits of consolidating these inventories within the Forward Support Battalion's (FSB) Assigned Stockage List (ASL). We show that consolidating at the FSB reduces the overall variance in demand for many of the inventory lines and allows the brigade to stock lower quantities of these lines, while maintaining essentially the same service levels. Potential savings to the Army exceed one and a half million dollars for the 3rd Brigade Combat Team alone.

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I. INTRODUCTION

A. BACKGROUND

The Army currently holds inventories of class IX repair parts at every company level motor pool to support readiness. These inventories are called Prescribed Load Lists (PLLs), hold up to 300 hundred different types of repair parts (commonly referred to as lines) with the average being around 160. There are about 30 of these inventories in a heavy brigade combat team. The value of PLLs in the 2nd Armored division alone is $3.9 million. [Ref. 13]

In an environment of ever increasing budgetary constraints, PLLs make a prime target for reducing costs. The consolidation of these PLLs at the Forward Support Battalion (FSB) should decrease the overall variance in demand, allowing the brigade to carry fewer parts, while maintaining essentially the service level. Consolidation could offer efficiencies by reducing stockage levels, reducing personnel requirements, reducing space and

transportation requirements, and perhaps most importantly, making the inventories easier to manage.

The authors experience suggest that some unit commanders have reservations about consolidation because they believe that it will degrade readiness due to the one or two days that it takes to receive a part. We also present some recommendations for avoiding possible delays, and show that potentially millions of dollars could be saved by reducing the quantity of repair parts stored by the Army. We demonstrate through the use of a spreadsheet model that PLL consolidation can offer substantial savings while retaining essentially the same service levels.

B.   SCOPE

We primarily focus on the effects of PLL consolidation on the brigade combat team (BCT). A BCT is made up of all the combat and support elements necessary to carry out combat operations independently. We consider all relevant information on equipment readiness, stockage levels, personnel, equipment, transportation, and procedures.

C. METHODOLOGY

The methodology can be divided into five primary steps: First we performed a comprehensive review of all available literature, reviewing the Army's current policies and regulations regarding PLLs. Second, we interviewed individuals at the Combined Arms Services Command (CASCOM) and the Army Material Systems Analysis Activity (AMSAA). Third, we conducted a review of previous studies PLL management. We specifically looked at the methodology these studies employed, the procedures used, evaluation criteria, and the conclusions and recommendations reached.

Fourth, we then gathered PLL data from a brigade combat team to build a model for consolidation using a spreadsheet program. The type of data we were primarily concerned with was the range and depth of PLL lines stocked and the demands received for these lines in a year (2 cycles).

Finally, we evaluated the outcomes of previous studies and the results of our own model to make our conclusions and recommendations.

D. ORGANIZATION

The rest of this thesis has four major sections. The first is descriptive, and provides an introduction to the study with some background material. The second section summarizes previous studies and presents the conclusions and recommendations reached. The third describes a model to evaluate the effects of PLL consolidation on stockage levels. It also discusses the incentives to consolidate and some of the barriers to implementation. The final section summarizes the study and provides conclusions and recommendations.

II. BACKGROUND

A. PRESCRIBED LOAD LIST (PLL)

A prescribed load list consists of organizational level maintenance repair parts that are demand supported, non-demand supported, and initial stockage items for newly introduced end items. Units keep these inventories in order to support their material readiness. For active duty units, this readiness rate must be at least 90% to be considered fully mission capable. This means that no more than 10% of a unit's equipment can be in a not mission capable status, if the unit is to be considered deployable.

B. MAKE-UP OF A HEAVY BRIGADE COMBAT TEAM (BCT)

A Brigade Combat Team (BCT) is made up of many different units of combat, combat support and combat service support elements both internal and external to the brigade. It consists of three maneuver battalions (a mix of infantry and armor), an engineer battalion, a field artillery battalion, a forward support battalion, and several separate companies. An organizational chart for the BCT is shown in Figure 1.

There are about 30 companies in the BCT. Each of these companies carries a PLL inventory that is based on demand history and on the commander's judgment. This makes the PLL specifically configured to each unit's needs. Generally, the same types of companies carry approximately the same PLL lines. All the elements in the BCT are supported by the Forward Support Battalion and its ASL, both in garrison and in the field. It replenishes all of the BCT's PLLs through issuing from the ASL or ordering through the retail system.

C. PLL POLICIES

The regulation that governs the use of PLLs is AR710-2 Supply Policy Below The Wholesale Level which states what can and cannot be held in a unit's PLL stockage. The following is a brief summary of the major criteria regulating PLL stockage for active duty units: [Ref. 4]

   a. Demand supported items must have 6 demands within 180 days (one review Period) to add an item and 3 demands to retain.

   b. Parts must have an essentiality code of "C" which designates it as essential to the operation of the end item, and have a maintenance use code of "O" denoting organizational level use.

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A CO	A CO	A CO	A CO	A CO	MAINT	MI
B CO	B CO	B CO	B CO	B CO	MEDICAL	SIG
C CO	C CO	C CO	C CO	C CO		
D CO	D CO	D CO				
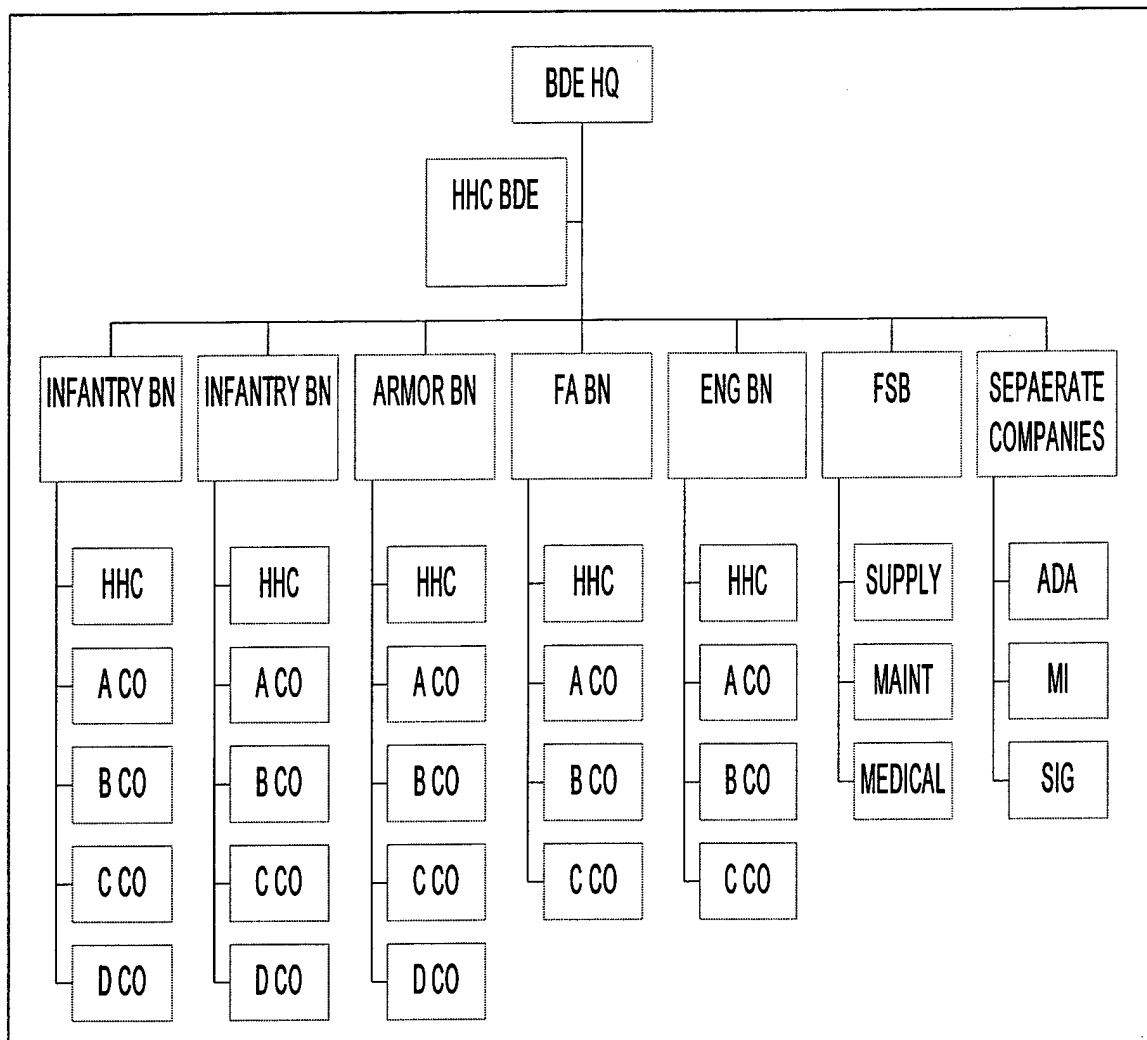
Figure 1 Generic Heavy Brigade Combat Team

c. Initial stockage items will not be decreased until
   after two review periods (360 days).

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d. In order to stock non-demand supported items, approval must be received by the first general officer in the chain of command.

e. Non-demand supported items will not be reduced for up to four full review periods.

f. PLLs will not exceed 300 lines unless the following conditions are met:

1. demand supported items combined with mandatory stockage items and the support list allowance exceed 300 lines.

2. Unit has the ability to move PLL into combat in one lift using organic equipment.

3. Approval in writing from the first general officer in the chain of command.

These criteria are the guidelines the units use when building and maintaining PLLs.

D.   REPLENISHMENT PROCEDURES

This section, is intended to give the reader a brief understanding of how the current replenishment procedures in a division work. We will start from the identification of a

needed part through the receipt of the part by the motor pool. [see Figure 2]

In a normal replenishment, the operator first performs a preventive maintenance level check on the vehicle. Once a deficiency is noted, it is recorded on a form and turned into the motor pool so that a mechanic can verify the deficiency. The mechanic then researches the national stock number (NSN) for the part and writes it down on the form. The form is then given to the Unit Level Logistics System (ULLS) Clerk to be ordered.

The ULLS clerk then checks the NSN against the Army Master Data file (AMDF) to ensure it is valid and enters it into the ULLS computer, which checks to see if the part is on hand in the PLL. If it is, then an issue is made to the mechanic. If this part issue has caused the PLL to reach its reorder point, the computer automatically issues a request for the replenishment quantity. The requisitions for parts are then carried on disk each day to the Standard Army Retail Supply System(SARSS) at the FSBs ASL.

The requisition for the part is entered into SARSS and either filled from the ASL or the requisition is passed to

the main support battalion for issue from its ASL. If the main support battalion (MSB) does not have the part, the requisition is passed to the Material Management Center where it is punched into the Standard Army Intermediate Logistics System (SAILS) for replenishment.

Once the part is issued to the unit by the FSB it is placed in a customer bin which is checked each day by the ULLS clerk when he comes to drop off a new disk and pick up status on parts that are on order. The ULLS clerk returns to the unit and logs the receipt of the part into the ULLS and either issues the part to the mechanic or replaces it on the PLL.

E. PERSONNEL REQUIREMENTS

Most unit maintenance operations are authorized two Unit Level Logistics System (ULLS) maintenance clerks: one to handle the Army Maintenance Management System (TAMMS) and the other to manage the PLL. The essential tasks the PLL clerk must perform are [Ref. 8]:

1.   Knowing which class IX repair parts are authorized in the unit, and in what quantities.

2. Ensuring that stock locations and quantities on hand match the PLL records.

3. Reordering replenishment repair parts as they are issued, unless no longer authorized.

4. Insuring that repair parts are secure and protected from damage.

5. Maintaining a neat and accurate document register (when applicable).

6. Reconciliation of the document register with the current status received from the supporting supply activity (FSB).

7. Understanding the TAMMS records and PLL functions interface.

8. Understanding how to properly use the Army Master Data File.

In addition to the two ULLS clerks there is usually a sergeant to supervise the administration of the ULLS, PLL and TAMMS processes. The motor sergeant and motor officer are also actively involved in monitoring the PLL due to its importance to readiness of the unit.
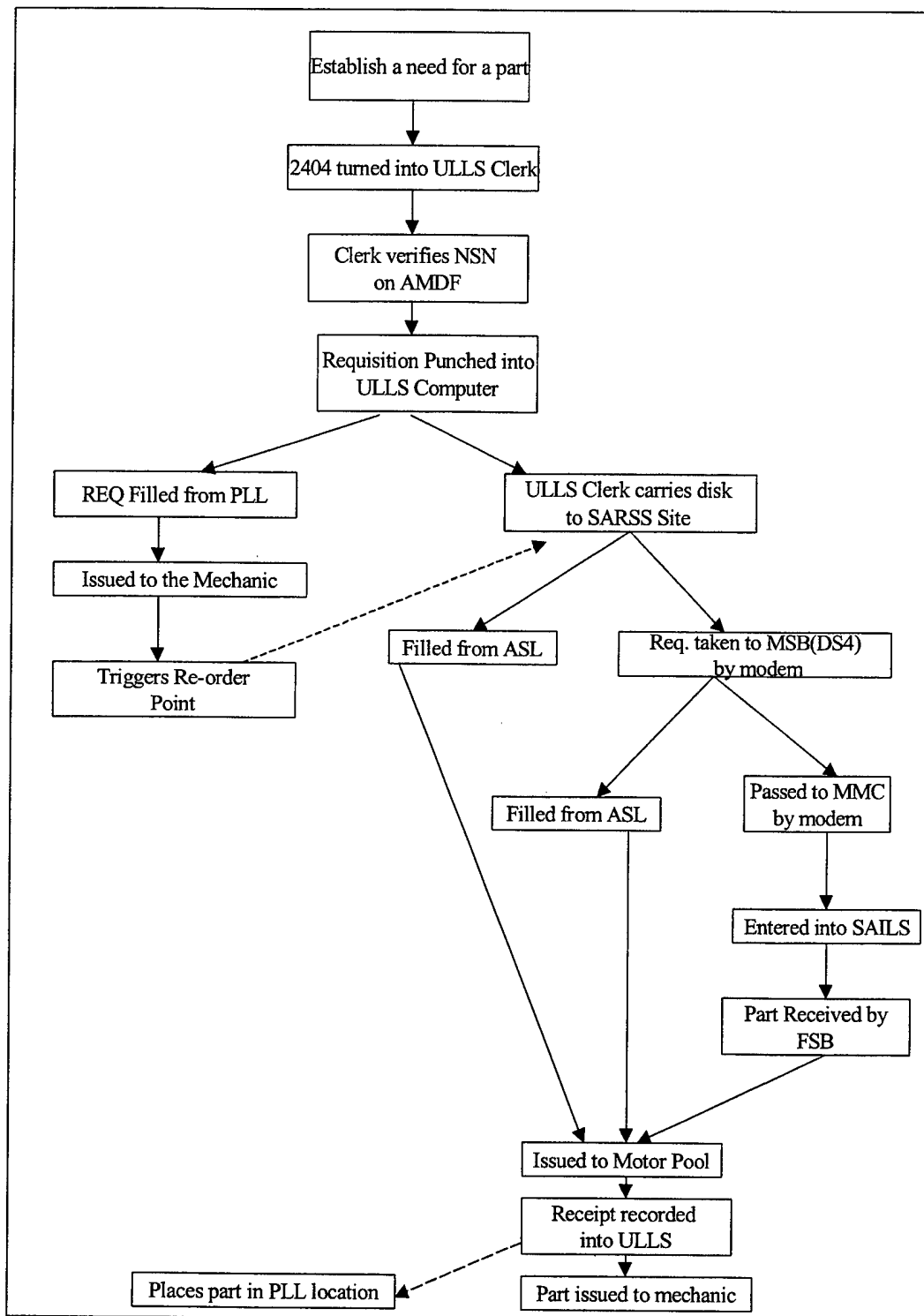
Figure 2 Replenishment Procedures

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F. OVERVIEW OF THE ASL

In this section we provide the reader with a brief overview of the organization and operations of a FSBs ASL to establish a clear understanding of where we suggest the PLLs be consolidated.

The mission of a Forward Support Battalion's class IX ASL is to provide repair parts support to the BCT's motor pools, one intermediate maintenance facility, and any maintenance contact teams that exist. The total number of customers may be as high as 30-50 units. The FSB ASL maintains an inventory of about 1200 lines with the Main Support Battalion (MSB) holding the bulk of the inventory about 3000 lines. The FSB's ASL is usually located in and managed by the FSB's maintenance company. The Direct Support Maintenance Company consists of between 240-300 personnel.

To accomplish its mission, the ASL is set up into three basic sections: the Stock Control Section, the Receipt, Storage and Issue Section and the Repairable Exchange Section. The Stock Control Section is responsible for stock accounting, maintaining the accountable records on the

computer, receiving customer requests for parts and forwarding requests to higher sources of supply. The other two sections are combined in what is commonly referred to as a warehouse. The warehouse receives parts from the supply system and places them in storage or processes them for issue to customers. The warehouse also performs location maintenance and inventory functions. Another mission of the warehouse is the retrograde of customer serviceable and unserviceable excess that is known as the turn-in process [Ref. 14].

G. REVIEW OF PREVIOUS STUDIES

Between June of 1995 and June of 1996 The Army Material Systems Analysis Activity (AMSAA) conducted three studies on the impact of altering or eliminating the stockage of PLLs at the unit level.

The first study [Ref. 13] was done at the request of the Forces Command Inspector General's Office (IG). Since many of the PLL lines were not demand supported, the IG reasoned that the PLLs were not contributing significantly to the readiness of the units. The study used data from the 2nd Armored Division, and evaluated 76 different PLLs with

the number of lines ranging from 1 to 418, with an average of about 160 lines. AMSAA specifically noted the number of demands for items on the PLLs, evaluated the supply performance of the PLLs, and determined the readiness impact of eliminating PLLs.

The Study produced three primary findings:

1. That the PLL lines were being mismanaged with 7,544 lines of the division's 12,122 PLL lines receiving no demands in the past 12 months.

2. Eliminating PLLs had only a slight impact on the overall supply performance for the division, decreasing the essential fill rate for requisitions from 80% to 79%.

3. The readiness impact was minimal if there was only a one day wait to receive parts from the ASL, reducing the mission capable status of M1A1 tanks by 1.4% - 3.5%. If it required two days, there was a greater impact, with the reduction in readiness ranging from 2.8% - 7%.

The second study [Ref. 12] examined the 3rd Armored Cavalry Regiment (ACR). In addition to looking at the items

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the first study looked at, this study also developed PLLs based on the criteria of AR710-2, Inventory management Supply Policy Below the Whole Sale Level.

Their findings were similar to those of the first study in that PLLs were being poorly managed, with 75% of the PLL lines receiving no demands in 9 months. Analysts also found that the units were not following the criteria for PLLs listed in AR710-2. The 3rd ACR held 32 PLLs with an average of 195 lines; however, by adhering to the guidance in AR710-2 they should have had only 27 PLLs with an average of 54 lines.

The third study [Ref. 9] conducted by AMSAA was done at the request of the Deputy Chief of Staff of Logistics. He directed AMSAA to determine the impact on PLLs of changing the Add/Retain criteria in AR710-2. For this study AMSAA again used the 2nd Armored Division. They found that with the current Add/Retain criteria of 3 demands to add in one cycle (180 days) and one to retain (a 3/1 policy), the 2nd Armored Division would have 76 PLL's stocking 3,662 lines (48 lines per PLL). If the criteria were changed to 6/3, there would be 75 PLLs stocking 1,079 lines (14 lines per

PLL). They also found out that if they increased the criteria to 9/6 they would reduce the PLLs down to an average of 5 lines per PLL.

After this study was completed, the Army increased the criteria to 9/6 in June of 1996. This resulted in objections from the units and such degraded readiness that in August 1997 they changed the criteria to a 6/3 policy.

The findings in these studies demonstrate that the Army has a problem not only with which stockage criteria to use but also how to effectively enforce it. The studies also showed that response time had a significant impact on the readiness rates of the units.

H.   PROBLEMS WITH THE CURRENT SYSTEM

There are many problems with the current system of using PLLs to support readiness. The primary problem we believe is the management of the range and depth of the inventories being stocked. From previous studies and our own research we see that many of the units abuse the requirements for stocking PLL lines. In our collection of data from the third BCT as well as studies completed by AMSAA and FORSCOM we see that less than 25% of the PLL lines

were demand supported [Ref. 12]. In the third BCT more than 75% of the lines stocked received no demands in a one year period. This implies that the majority of lines stocked in the PLLs did not contribute to the readiness of the unit. It also implies that units were not properly managing their PLLs in that they were not deleting lines that did not meet the criteria for stockage.

There is also a lack of visibility in the BCT of which units are stocking which items. In order to get a complete listing of all the lines being carried by the units on PLL we had to request this information from each unit. There was no single source of this information. When units have a zero balance on an item and the ASL does not have the item, the unit must either wait for the part through the supply system or go from unit to unit trying to get the part. This can be a lengthy process since they do not know which other units might carry and have the item on hand. It should be noted though that in most battalions the PLL clerks are co-located which makes the search a little easier within the battalion.

Another problem with the management of PLLs is that currently the 4th Infantry Division is managing its PLLs

based solely on the dollar value of the inventories and not the effectiveness of the lines being held. This form of management defeats the whole purpose of carrying PLLs by focusing units' efforts more on managing the dollar values of the inventories rather than on items which could provide them with the greatest amount of readiness. It shifts the focus away from managing high demand items to carrying lower priced parts that may not provide as much benefit.

The current system is also not using Electronic Data Interchange(EDI) to its utmost. Many units use EDI in garrison to transmit requisitions from ULLS to SARSS and acquire status, but they do not extend this to the field. The primary reason for this is the lack of access to land lines and the needed training to transmit data by other means. There are currently several options for transmitting this kind of data in the field, including SINGARS tactical radios, the Mobile Subscriber Radio Telephone (MSRT), or cellular telephones. The 1st brigade of the 4th Infantry Division is testing a tactical intranet system which is capable of sending this sort of information.

Perhaps the most cumbersome and time consuming problem is that each unit must make a trip to the ASL each day to check for parts.

III. MODEL APPLICATION

A.   OBJECTIVE

Our objective is to provide the BCT with a system that reduces class IX inventories and improves inventory management through total asset visibility, without decreasing the service level (Service level is the complement of the probability of a stock-out. For instance, if the probability of a stock out is 0.10, then the service level is 0.90). The idea of reducing variance in the lines stocked by the BCT is the basis for our model. This is important because if we can reduce the variance in the lines stocked, we can decrease the depth of the inventories in the BCT without decreasing the service level provided.

B.   THE MODEL

1.   Introduction

.We developed a model which enables the brigade combat team to get the highest supply effectiveness for the least cost. Supply effectiveness is the ability of the BCT's Class IX inventories to satisfy demand. We propose doing this by

eliminating stockage of Class IX repair parts in the units and consolidating them in the FSB's ASL.

Our model determines the different stockage levels required to achieve a 90% service level with PLLs and with a consolidated stockage. We choose a 90% service level because that is the level of operational availability required for most active duty units to be considered fully deployable. In our model we make the assumption that a stock out is equivalent to a piece of equipment being not mission capable, since all PLL parts are supposed to be mission critical.

2. Example of Consolidation Effects

We use the Poisson distribution to model demand for repair parts because it has the property that the time to the next demand for an item does not depend on the time since the last demand. This most adequately represents the demand distribution for PLL type parts.

The easiest way to understand the concept behind consolidating and reducing the variance is through an example.

A certain spare part for the M2A3 Bradley fighting vehicle is procured every quarter. The protection (service) level must be a minimum of 95%. The demand during the quarter at PLL-1 follows a Poisson distribution with a mean of 5, the demand at PLL-2 follows a Poisson distribution with a mean of 7, and demand at PLL-3 follows a Poisson distribution with a mean 8. How many spares are required to be stocked at each location in order to maintain a 95% protection level?

If the spares are stored at each location, the following stockage levels are required: (see Appendix D Cumulative Poisson Probabilities)

Location	Demand	Required stock level
PLL-1	5	9
PLL-2	7	12
PLL-3	8	13
	Total	34

If the spares are consolidated in one location only 29 spares are required to maintain a 95% protection level. This results in a savings of 5 parts while maintaining the same supply effectiveness in satisfying demand. This can equate to a considerable amount of money depending on the cost of the spare.

3. Input To The Model

The following listings and reports were collected from the BCT:

From the units we collected:

- PLL Listings with demand data - This gave us the lines that were being carried on the PLLs and the demands for those lines.

- Demand summary analysis report - This report gave us information on lines to add or delete from the PLLs based on demand.

From the FSB ASL we collected:

- Stock Status Report - This report gave us the lines that were carried on the ASL.

- Activity Account Code File - This print out provided us with all of the Department of Defense Activity Codes for the units in the BCT.

- Printouts from the Central Demand Data Base - Provided us with a year's worth of demand for the lines used in our model.

We were unable to collect data from the following units for use in our model: Headquarters Company 3rd Brigade, 1/44 Air Defense Artillery Company, 104th Military Intelligence Company.

4. Approach

We used data from the 3rd BCT 4th Infantry Division, stationed at Fort Carson, Colorado. We collected current PLL

listings and demand summary analysis reports from the units.
We collected demand data from the Army's Central Demand Data
Base at the Logistics Support Agency (LOGSA), from which we
were able to construct a twelve month demand history for the
BCTs PLL lines. We also collected data from the FSB's ASL in
order to evaluate which lines were already being stocked on
the ASL. The information collected allowed us to create a
spreadsheet to evaluate the different stockage levels
required using either PLLs or a consolidation of class IX in
the ASL.

IV. PRESENTATION OF DATA

A. INTRODUCTION

The purpose of this chapter is to quantify three different methods of stocking essential parts for units. The first scenario represents the current system of holding PLLs at each company level and the amount of stocks currently held. The second represents the amount of inventories required to be held under a consolidated inventory in the ASL. The Third computes the stockage required to achieve a 90% service level under a consolidated inventory. We computed the service level because it allows us to predict how effective the inventory will be in satisfying a certain level of demand.

B. MODEL PARAMETERS

In this section we discuss how certain columns in our model were computed. The Model is shown in figure 5. The Following is a list of the different columns and how they were derived:

NIIN (National Item Identification Number): This is a comprehensive list of all the PLL lines stocked by the 3rd BCT. These lines were taken directly from the PLL lists submitted by the units. There are 481 different types of lines being held at the unit level.

Price: Gives the price for each individual NIIN from the November 1997 Federal Logistics Data (FEDLOG).

Annual Demand: The cumulative quantity of parts demanded for that line from the 3rd BCT for one year, from October 1, 1996 to September 31, 1997.

Current Stockage: The total authorized stockage level for each NIIN in the BCT. This level includes all of the PLLs stockage and the ASL stockage if it carries the line.

Investment with PLL: The price multiplied by the current stockage quantity to give the dollar value for that line. The total at the bottom of this column gives the total Class IX inventory investment in PLL lines for the BCT.

Consolidated Stockage: The quantities that would be stocked if the PLLs were eliminated and all Class IX inventories were stocked in the ASL. The Requisition Objectives (RO) were computed using the formula in Figure #3

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taken from Army Regulation, 710-2, Update 14, <u>Inventory</u> <u>Management Supply Policy Below The Whole-sale Level.</u> Active duty units use a 15 day *operating level* and a 15 day *safety level* in establishing ASL requisitioning objectives. We used the average order to ship time of 25 days, because this is the value that is set in the SARSS computer.

$$\left(\frac{OLD + SLD + OSTD}{360} \right) \times QDCP = ROQ$$

OLD   =   Operating Level Days

OSTD   =   Order Shipping Time Days

QDCP   =   Quantity Demanded in the control period

ROQ   =   Requisitioning Objective Quantity

SLD   =   Safety Level Days

Figure 3 Requisitioning Objective Calculation

It should be noted that using a days of supply formula like this one has many weaknesses. Each line is computed solely on a fixed demand and a fixed average lead time which does not account for variations in either. This type of formula also computes stocking levels based on individual lines and does not optimize the entire investment in inventory. A days of supply stocking policy also does not

take into account cost of the items when determining stocking levels.

Investment Consolidated: The price multiplied by the Consolidated stockage quantity. The total at the bottom of this column represents the total investment in inventory under a consolidated scenario.

Consolidation with Service Level Greater than 90%: Calculates the stockage required to give the BCT a 90% service level for each line. It is calculated using the cumulative Poisson probability distribution which is shown in figure 4 and an abbreviated table is in Appendix E.

$$F(x; \lambda) = \sum_{y=0}^{x} \frac{e^{-\lambda} \lambda^y}{y!}$$

λ = *Lead Time Demand*

X = *Quantity Stocked*

Figure 4 Cumulative Poisson Probabilities

Investment Service Level >90%: The price multiplied by the consolidation with SL>90% quantities. The total at the

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bottom of the column gives the total inventory investment using the service level criteria.

Depth of Inventory: The total quantity of PLL type parts carried under each of the scenarios.

Range of Inventory: The total number of different PLL lines carried under each scenario. The number of lines carried in the Consolidated scenario were calculated using the retain criteria for the ASL which is currently 3 demands in 360 days.

Average Service Level: The average service level for all lines carried given the demand we used in our control period.

C. THE MODEL

The complete model is in Appendix F. Figure 5 on the next page is a representative sample with the totals.

D. PLL'S

Our analysis of the units PLL listings with demand history showed that out of the 3987 lines stocked by the BCT only 958 or 24% received enough demands to be retained under the criteria outlined in AR710-2. This shows that PLL

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NIIN	Price	Annual Demand	Current Stockage	Investment With PLL	Consolidated Stockage	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
000000079	$ 0.07	262	2	$ 0.14	41	$ 2.87	24	$ 1.68
000013548	$ 25.58	0	7	$ 179.06	0	$ -	0	$ -
000103867	$ 0.14	15	1	$ 0.14	3	$ 0.42	2	$ 0.28
000013530	$ 93.18	4	7	$ 652.26	1	$ 93.18	1	$ 93.18
000013548	$ 25.58		3	$ 76.74	0	$ -	0	$ -
000115730	$ 0.15	246	100	$ 15.00	38	$ 5.70	22	$ 3.30
000120151	$ 0.53	66	43	$ 22.79	11	$ 5.83	7	$ 3.71
000264767	$ 11.25	5	13	$ 146.25	1	$ 11.25	1	$ 11.25
000402188	$ 118.00	15	4	$ 472.00	3	$ 354.00	2	$ 236.00
000433463	$ 47.14		5	$ 235.70	0	$ -	0	$ -
000446914	$ 0.66	316	309	$ 203.94	49	$ 32.34	28	$ 18.48
000519464	$ 25.67	2	3	$ 77.01	1	$ 25.67	1	$ 25.67
000782908	$ 71.24	1068	1004	$ 71,524.96	164	$ 11,683.36	85	$ 6,055.40
000802012	$ 0.30	5	79	$ 23.70	1	$ 0.30	1	$ 0.30
000826034	$ 2.14	34	70	$ 149.80	6	$ 12.84	4	$ 8.56
000830266	$ 58.62	1	7	$ 410.34	1	$ 58.62	1	$ 58.62
000873930	$ 15.99	45	20	$ 319.80	7	$ 111.93	5	$ 79.95
000879881	$ 14.06	48	14	$ 196.84	8	$ 112.48	6	$ 84.36
000892030	$ 276.00		1	$ 276.00	0	$ -	0	$ -
001003883	$ 10.62	2	3	$ 31.86	1	$ 10.62	1	$ 10.62
001004471	$ 11.75	4	13	$ 152.75	1	$ 11.75	1	$ 11.75
001014194	$ 42.72	2	7	$ 299.04	1	$ 42.72	1	$ 42.72
001016493	$ 49.72		4	$ 198.88	0	$ -	0	$ -
001277186	$ 20.23		1	$ 20.23	0	$ -	0	$ -
001339629	$ 18.02	1	7	$ 126.14	1	$ 18.02	1	$ 18.02
001347835	$ 4.47	63	14	$ 62.58	10	$ 44.70	7	$ 31.29
013399543	$ 607.00	2	4	$ 2,428.00	1	$ 607.00	1	$ 607.00
013414647	$ 356.00	11	9	$ 3,204.00	2	$ 712.00	2	$ 712.00
013440469	$ 15,037.00	1	3	$ 45,111.00	1	$ 15,037.00	1	$ 15,037.00
013458887	$ 873.00	3	4	$ 3,492.00	1	$ 873.00	1	$ 873.00
013458888	$ 661.00		6	$ 3,966.00	0	$ -	0	$ -
013582102	$ 28.63	3	2	$ 57.26	1	$ 28.63	1	$ 28.63
013688586	$ 2,378.00		3	$ 7,134.00	0	$ -	0	$ -
013720720	$ 18,847.00	3	5	$ 94,235.00	1	$ 18,847.00	1	$ 18,847.00
013805865	$ 264.00	4	2	$ 528.00	1	$ 264.00	1	$ 264.00
013823218	$ 680.00		1	$ 680.00	0	$ -	0	$ -
013823221	$ 1,910.00	2	1	$ 1,910.00	1	$ 1,910.00	1	$ 1,910.00
013823222	$ 184.00		5	$ 920.00	0	$ -	0	$ -
013828728	$ 179.67	3	1	$ 179.67	1	$ 179.67	1	$ 179.67
013828874	$ 175.89	3	1	$ 175.89	1	$ 175.89	1	$ 175.89
013832387	$ 166.90		1	$ 166.90	0	$ -	0	$ -
013884046	$ 175.00		2	$ 350.00	0	$ -	0	$ -
013901969	$ 53.16	57	184	$ 9,781.44	9	$ 478.44	7	$ 372.12
013933723	$ 3,439.00	1	2	$ 6,878.00	1	$ 3,439.00	1	$ 3,439.00
013959585	$ 182.00	26	10	$ 1,820.00	4	$ 728.00	4	$ 728.00
013977544	$ 874.00		2	$ 1,748.00	0	$ -	0	$ -
014069209	$ 198.00	24	21	$ 4,158.00	4	$ 792.00	3	$ 594.00
014131366	$ 34.74	16	19	$ 660.06	3	$ 104.22	2	$ 69.48
014160888	$ 1,860.00		1	$ 1,860.00	0	$ -	0	$ -
014185535	$ 67.76	1	8	$ 542.08	1	$ 67.76	1	$ 67.76
014198196	$ 789.00		1	$ 789.00	0	$ -	0	$ -
018920068			1	$ -	0	$ -	0	$ -
121790165	$ 307.00		3	$ 921.00	0	$ -	0	$ -
121799627	$ 1.07	3	2	$ 2.14	1	$ 1.07	1	$ 1.07
121890271	$ 345.00		1	$ 345.00	0	$ -	0	$ -
121890284	$ 0.82	10	8	$ 6.56	2	$ 1.64	2	$ 1.64
121922722	$ 11.13	1	11	$ 122.43	1	$ 11.13	1	$ 11.13
Total Inventory Value				$ 1,168,239.93		$ 268,065.96		$ 240,653.77
Depth of inventoy			7971		2419		1629	
Range of Inventoy			481		362		362	
Average Service Level			98%		96%		95%	

Figure 5 Comparision of Inventory Investments

inventories are made of mostly slow moving items with infrequent demands.

E. EVALUATION OF MODEL PARAMETERS

1. Investment in Inventories

Figure 6 shows the different levels of investment that would occur utilizing the three different stocking policies.

Inventory Investment

INVENTORIES

Legend: PLL's, Consolidated, SL>90%
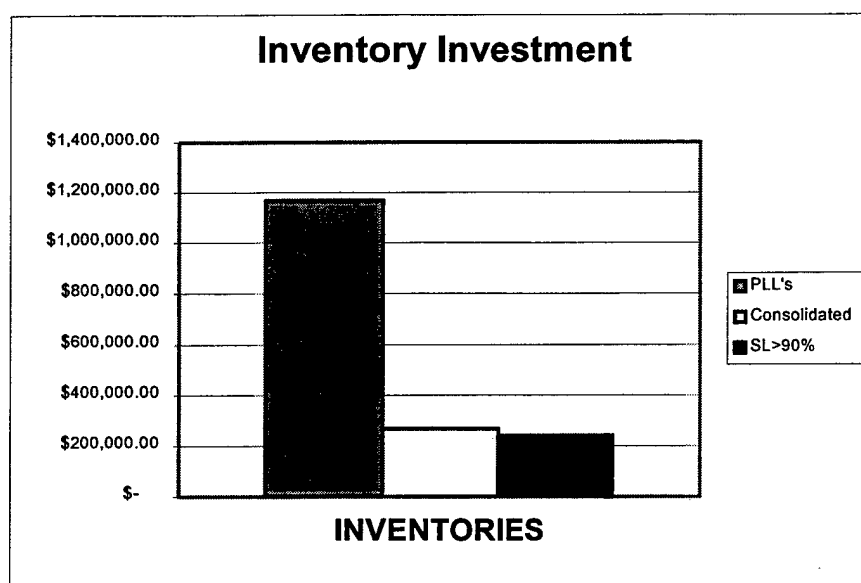
Figure 6 Comparison of Inventory Investment

The BCT would be able to reduce their investment in inventory by about 75% or roughly $900,000 if they consolidated into the ASL. They would also be able to save about 2% more if they instituted a policy of stocking each line to a 90% service level. It should be noted that any

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variance in the lead time demand will have a significant effect on how the inventory performs using a service level criteria. We conducted a sensitivity analysis that changed the OST from 25 days to 15 days and 35 days. An OST of 15 days resulted in increasing the service level to 99% while the OST of 35 days Decreased the service level to 94%. This could be significant for units that are just barely meeting the 90% material readiness requirement.

While the reduction of inventories due to consolidation results in only a one time inventory savings, they will continue to provide savings to the BCT each year through reduced holding, transportation and management costs. The reduction in inventory will also add value to the BCT by making it lighter and more maneuverable. Consolidation will provide the BCT with total asset visibility by holding all of the class IX inventories in either the ASL or shop stock.

2. Range of Inventories

The range of the inventory would only be slightly decreased from 481 lines to 362 lines through consolidation. Of the lines that would be deleted, more than 95% received no demands in 360 days (2 PLL review periods). If non-
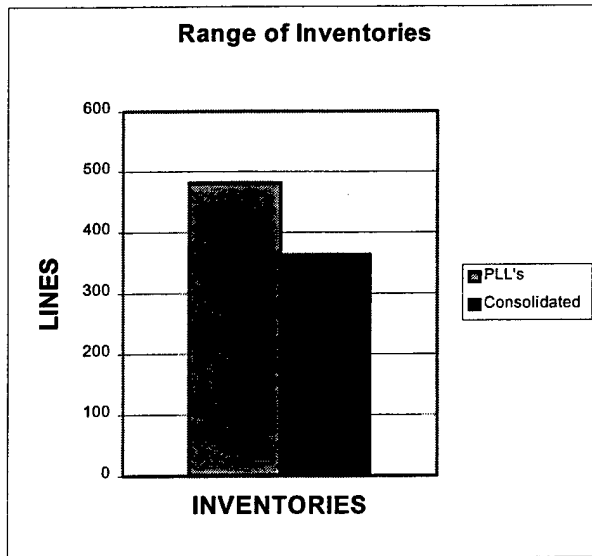
Figure 7 Comparison of Inventory Range

demand supported lines are mission essential to the BCT, they can still be stocked as an "M" coded line in the ASL, up to 10% of the total inventory.

3. Depth of Inventories

The depth of the inventories would be decreased significantly from 7971 to 2419 parts. Figure 8 shows the change in depth due to consolidation. Annual savings in the form of reduced holding costs would continue to occur even after consolidation. Headquarters, Department of the Army has established an annual holding cost estimate of about 40% of an item's unit price. Using this figure, the annual holding cost savings from consolidation would be $360,000.
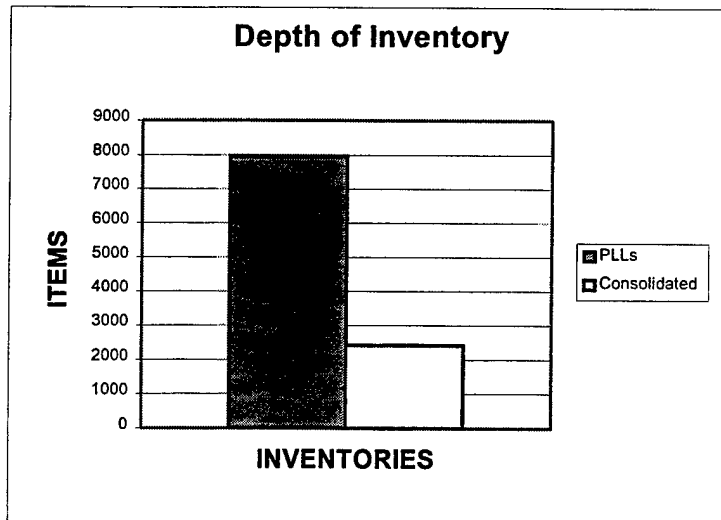
Figure 8 Comparison of Inventory Depth

4.   Average Service Level

We computed the service levels to get an objective

measure of how these inventories would perform given the

fiscal year 1997 demands. Our assumption in computing the

service levels is that if the part is stocked anywhere in

the BCT, it will be issued to satisfy the demand. Figure 9
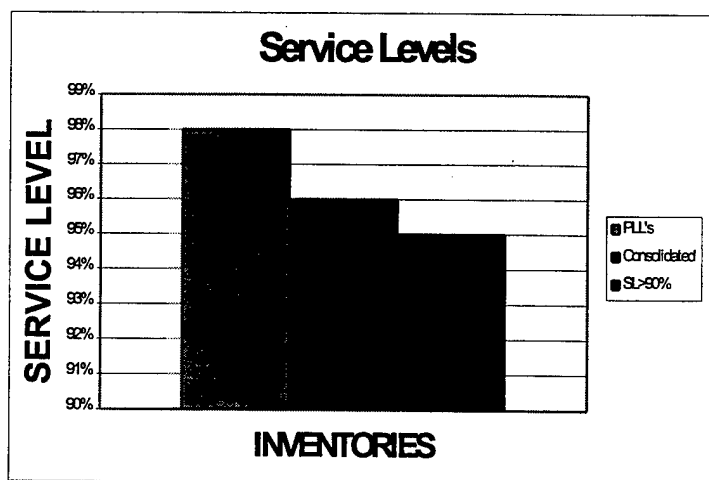
Figure 9 Comparison of Service Levels

shows that there is only a decrease in service level of about 2% from 98% to 96% when consolidating. It tells us that we could expect about a 2% jump in the number of back orders by consolidating given the same demand. Using the service level criteria resulted only an additional 1% drop in service level to 95%. This is because the a vast majority of items stocked are in quantities of 1 or 2. For instance to achieve a 90% service level with line "121890284" we had to increase stockage quantity from 1 to 2 which changed the service level from 84% to 96%.

5. Potential Savings

The potential savings are conservative and by no means comprehensive, but they do demonstrate that there are significant savings to be realized through consolidation. The following is a list of the savings the BCT could expect from consolidation:

Initial inventory reduction	$900,000
Reduced annual holding costs	$360,000
Reduced personnel costs	$700,000
Savings to BCT	$1,960,000

If we expand our analysis, making the assumption that the 3rd BCT is representative of other heavy BCTs, we can estimate the savings Army-wide. The Army currently has six heavy divisions with three BCTs per division. If all BCTs realize approximately the same amount of savings, they could save around $35,000,000 in the first year and around $19,000,000 annually after that in reduced holding and personnel costs.

Other savings could be recognized that are not quantified in this thesis, such as transportation and ordering costs.

F.   WEAKNESSES OF THE MODEL

A primary weakness in our model is its simplification of relating Supply effectiveness to only stockouts and ACWTs. There are many other factors that have an impact on supply effectiveness that were not addressed in our thesis.

We also assume that a 90% service level is appropriate, equating it to required material readiness rates for active duty units. We could find no reference to a desired service level for Army Class IX inventories. Further studies are

required using simulation and actual tests to determine the most effective service level to use.

It should be noted that the 3rd BCT is a separate brigade. Which means that it is not supported by a main ASL. This results in the FSB's ASL stocking about 30% more lines than a standard FSB ASL.

G. BARRIERS TO IMPLEMENTATION

1. Increased Average Customer Wait Times (ACWT)

The primary obstacle to consolidating PLLs is the potential for increased average customer wait times (ACWT). AMSAA concluded from its studies on PLL elimination that a one day ACWT had little or no impact on readiness rates. It also concluded that if the ACWT were to increase to two days there would be a reduction in readiness ranging from a 7% drop to a 2.8% drop depending on the type of unit.

Our solution to increased ACWTs is to implement a new distribution system for class IX requests from the ASL to customer units. We suggest that the ASL's customers use modems to transmit requisitions and receive status in garrison and the field, and that the ASL deliver parts twice a day to customers. The way the system would work is that

instead of customers coming to the ASL each day to check their bins, the ASL would deliver parts the motor pools twice a day.

The ASL would pick orders twice a day. They would pick the orders directly from the ASL locations and then place them in customer bins mounted on two trucks. These trucks would then begin deliveries once in the morning and again in the afternoon each working day. These delivery vehicles could also back haul unserviceables.

The ASL would have to add atleast three new personnel to handle the additional work load of delivery. No additional personnel would be required for picking since this function is already being accomplished at the ASL. The only difference would be that the customer bins would be mounted in the delivery trucks rather than in the ASLs facilities.

In the field, deliveries could be handled in much the same way with perhaps a third delivery being conducted around midnight due to increased parts usage and 24 hour operations. With the widespread applications of global positioning systems (GPS), it is much easier to locate unit

maintenance collection points (UMCP). Another option is to handle deliveries the same way it is done today, by having the unit field trains pick up the parts at the ASL and deliver them out to the UMCPs with the Logistics Packages (LOGPACS). The field trains are co-located with the FSB in the Brigade Support Area (BSA) in the field. These measures should keep the ACWT at about a half a day. See Figure 10 for revised replenishment procedures.

2.   Non-Demand Supported Lines

Consolidating inventories will result in a change in the way units are allowed to stock non-demand supported items. Unit Commanders can add non-demand supported lines to their PLLs by acquiring permission from the first general officer in the chain of command. Under consolidation this is authorized to stock a maximum of 10% of their lines a would be changed and commanders would have to request through the ASL Review Board that the non-demand supported line be added as an "M" line on the ASL. Currently the ASL s non-demand supported "M" lines.

This 10% maximum may not be sufficient under a consolidated class IX strategy to adequately handle all of
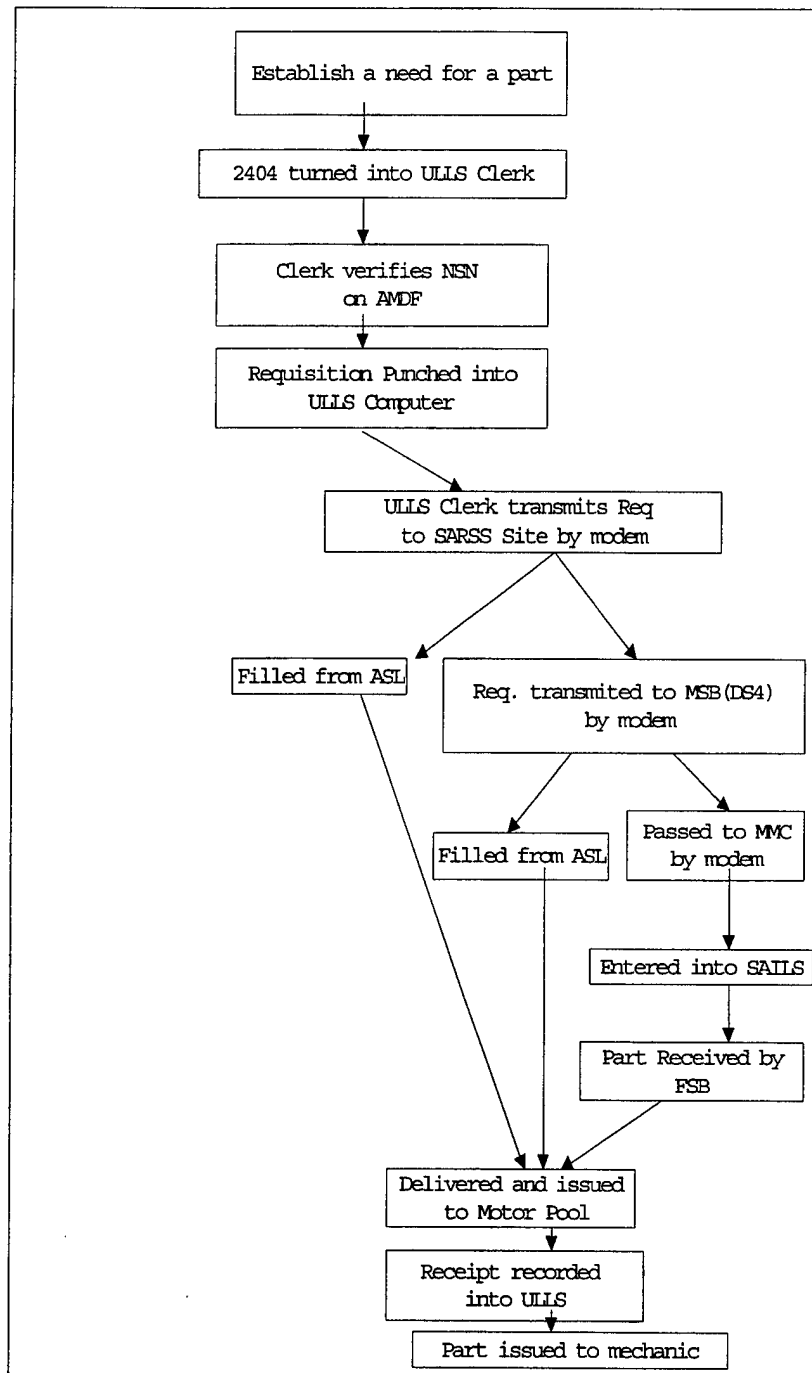
Figure 10 Revised Replenishment Procedures

the range of essential stocks required for rapid deployment. We recommend that further research and analysis be conducted to determine the appropriate amount of non-demand supported items to stock.

H.   INCENTIVES TO ADOPT THE MODEL

PLL consolidation offers the following efficiencies:

Personnel: Consolidation would allow the BCT to eliminate the PLL clerk positions in the units, leaving the TAMMS clerk to easily handle all of the remaining ULLS Functions. Three personnel would have to be added to the ASL to handle the distribution of parts. This would result in a net savings of 29 personnel. The base pay, allowance for subsistence, allowance for quarters and average variable housing allowance for an E4 with four years of service is $24,182. If we multiply this amount by the 29 personnel we come up with a savings of over $700,000 a year. This figure increases significantly when other benefits such as health care are included.

Equipment: The BCT could eliminate all of the trucks it currently uses to haul PLL lines to the field.

Total Asset Visibility: Consolidation would put all of the BCT's class IX parts in a single location, allowing the unit to gain total asset visibility simply by looking at the ASL stock status report and the maintenance companies shop stock listing.

Management: The management of the lines would become much easier because of TAV and the fact that all lines in the BCT would be subject to a semi-annual review conducted by the ASL Review Board. This would allow the BCT to make better decisions on what to carry.

V.   CONCLUSIONS AND RECOMMENDATIONS

A.   CONCLUSIONS

Our research using the 3rd Brigade Combat Team of the 4th Infantry Division indicates that PLL items are infrequently demanded, with more than 25% of the lines receiving no demands in 360 days. This makes them prime candidates for deletion or consolidation. There is a tremendous potential for savings by consolidating the PLLs into the ASL. Our research suggests that the anticipated savings for the 3rd brigade alone could be as high as that shown in Figure 11.

Initial inventory reduction	$ 900,000
Reduced Annual Holding Costs	$ 360,000
Reduced Personnel Costs	<u>$ 700,000</u>
Savings to BCT	$1,960,000
Re-occurring Annual Savings	$1,060,000

Figure 11 Savings From Consolidation

The cost of consolidation to the BCT is a reduction in the service level of the inventories from 98% to 96%, resulting in a 2% increase in the number of expected back orders. The units would also experience an increase of one day in the ACWT due to the delivery time from the ASL to the customer unit.

The number of lines in the unit PLLs that did not receive enough demands in the past year to be retained (3,029 out of 3987), indicate that the PLLs are not being managed properly at the unit level. The units are not deleting lines that do not meet the criteria for retention. It is the author's opinion, that units do not trust the supply system to be responsive to their needs.

There is no visibility of PLL inventories above the company level in the BCT or at the division level. Collecting data for this thesis required us to solicit listings for each individual company. This lack of visibility results in increased down time due to the need to wait for a part to be received through supply system, when it might already be on-hand in another unit in the BCT.

The Army should implement the newest technology such as EDI and GPS into its supply distribution systems. The ASL can greatly enhance its customer service, reduce ACWT's, and reduce costs by delivering parts to the customers rather than the customers having to come back and pick up parts each day. The use of EDI will make the processing of disks obsolete. This would eliminate the requirement for the 32 units in the BCT to make a trip to the ASL each day. The only investment required to change

the distribution system would be the addition of three drivers to the ASL and 2 delivery vehicles with customer bins built into the cargo area.

B. RECOMMENDATIONS

1. We recommend that the Army eliminate PLLs and consolidate all Class IX inventories into the Forward Support Battalion's ASL.

2. We recommend that our distribution model be adopted regardless of consolidation in order to take advantage of reduced ACWTs, and reduced distribution costs. This will result in better customer service at a lower cost.

3. We recommend that the Army examine the impact on readiness of consolidating PLLs into the ASL. They should examine the effects both in garrison and in the field of these changes. Special attention should be paid to the effects on ACWTs.

C. FOLLOW ON RESEARCH

Areas of further research that we believe would be useful to the Army are in the modeling and simulation of inventory. Further research should also be conducted on evaluating what service level is appropriate for the Army. In particular what should our stocking objective should be?

Lastly research is necessary to find out if we really need to maintain non-demand supported inventories at the unit level and if so in what quantities.

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APPENDIX A

Prescribed Load List (PLL) Analyses Conducted by the U.S. Army Materiel Systems Analysis Activity (AMSAA)

Prescribed Load List (PLL) Analyses Conducted by the U.S. Army Materiel Systems Analysis Activity (AMSAA)

In the past year, AMSAA has conducted three studies on the impact of altering or eliminating the stockage of PLLs at the unit level. The first study, done at the request of FORSCOM, analyzed the impact of eliminating the PLLs on supply performance and readiness for the 2nd Armored Division. The overall findings of the study were:

- There were 76 PLLs included in the analysis with the number of lines ranging from 1 to 418, with an average of 160 lines per PLL.
- 7,544 out of 12,122 PLL lines were not demanded in a one year period.
- The divisional supply performance (i.e., the supply performance of the ASL and PLLs combined) for all requisitions was:
  - 69% accommodation   - 84% satisfaction   - 58% fill rate
- The supply performance for just the PLLs for all requisitions was:
  - 21% accommodation   - 85% satisfaction   - 18% fill rate
- Eliminating the PLLs had a slight impact on the overall supply performance for the Division, decreasing the fill rate for essential requisitions from 80% to 79%.
- The readiness impact of eliminating PLLs was minimal if there was a one day wait to receive parts from the ASL, ranging from 1.4% to 3.5% for M1A1s. If the OST were two days, there is a greater impact, with the reduction in readiness ranging from 2.8% to 7%.

A second PLL elimination analysis was conducted for the FORSCOM J4 based on the 3rd Armored Cavalry Regiment. In addition to the above analysis on the units' actual PLLs, this study also included the development of PLLs based on the criteria of AR 710-2 and analyzing their performance. The major findings of this study were:

- There were 32 actual PLLs consisting of 6,224 lines (195 line average), while the PLLs based on AR 710-2 and the units' demands reduced the number of PLLs to 27 with 1,452 total lines (54 line average).
- 4,638 (75%) of the actual PLLs had no demands during the nine months of demand data used for the analysis. 1,452 (48%) of the AR 710-2 PLLs had no demands during the last three months of demand data (the first six months of data were used to develop the PLLs).
- The supply performance for the ASL and PLLs combined (combining the ASL with either the actual PLLs or the AR 710-2 PLLs resulted in the same performance) was:
  - 58% accommodation   - 77% satisfaction   - 45% fill rate
- The supply performance for the actual PLLs was:
  - 9.3% accommodation   - 69% satisfaction   - 6.4% fill rate
- The supply performance for the AR 710-2 PLLs was:
  - 11% accommodation   - 47% satisfaction   - 5% fill rate

- Eliminating the PLLs resulted in a slight reduction in overall supply performance, with a decrease in the fill rate from 45% to 43%.
- Based on a one day wait for parts from the ASL, there was negligible impact on readiness if the PLLs were eliminated, ranging from just over one-tenth of a percent to just under two percent for M1s.

The final PLL study, conducted at the request of the Office of DA DCSLOG, determined the impact on readiness and the size of the PLLs if the criteria of AR 710-2 for developing PLLs was changed. Previously, a part could be added to a PLL if it had three demands in 180 days, an essentiality code of "C", and a maintenance use code of "O", and the part must have had one demand in 180 days to be retained in the PLL. For this analysis, AMSAA developed PLLs for the 2nd Armored Division based on the previous criteria (with an average customer wait time [ACWT] of 10 days and five days), and add/retain criteria of 6/3 and 9/6. Following are the major findings of the study:

- With an add/retain criteria of 3/1, 76 PLLs stocked 3,662 lines (48 lines per PLL).
- With an add/retain criteria of 6/3, 75 PLLs stocked 1,079 lines (14 lines per PLL).
- With an add/retain criteria of 9/6, 66 PLL stocked 377 lines (5 lines per PLL).
- The readiness impact of increasing the add/retain criteria was minimal for M35 trucks and M2 Bradley Fighting Vehicles if the parts were available from the ASL in one day, although the impact on M1 Abrams Tanks was greater, with a reduction in readiness of over 6% if the add/retain criteria was increased to 9/6.

The briefings for these three studies are attached. If any additional information is required, the AMSAA POC is Kevin Shorter, DSN 298-7845.

APPENDIX B

PRESCRIBED LOAD LIST ELIMINATION STUDY

PRESCRIBED LOAD LIST ELIMINATION STUDY

1. INTRODUCTION

1.1 Background.

During an investigation of unit prescribed load lists (PLLs), the FORSCOM Inspector General's Office noted that many of the National Stock Numbers (NSNs) stocked were not demand supported. Army Regulation 710-2 requires that a part have three demands in 180 days, have an essentiality code of "C", and have a maintenance use code of "O" in order for the part to be stocked in the PLL. Since many of the lines were not demand supported, the FORSCOM Inspector General's Office reasoned that the PLLs were not contributing significantly to the supply performance and/or readiness of the unit and requested that AMSAA analyze the impact of the PLLs on these two areas.

1.2 Scope.

The PLL elimination analysis was conducted using data from the 2nd Armored Division. FORSCOM provided PLL listings, the Direct Support Unit Standard Supply System (DS4) Stock Status Report, the DS4 Activity Account Code File, and the DS4 PLL Demand History Listings (1 year) dating from January 1994 through December 1994. Supply performance was determined using data from the one year of PLL Demand History Listings. Supply performance was measured two ways; overall supply performance for the Division with the PLLs included, and overall supply performance with the PLLs excluded. The readiness impact of the PLL was assessed based on unit demands from the Unit Demand Summary Listing.

1.3 Approach.

The supply performance of the Authorized Stockage List (ASL) and PLLs was produced based on the demands in the 2nd Armored Division during a one year period using the AMSAA Supply Performance Evaluator. The Supply Performance Evaluator simulates the events that actually occur in a class IX environment during the requisitioning and receiving of repair parts. It searches the PLL for the part and issues the part if it is available, requisitioning the part to re-fill the PLL if it was issued. If the part is not available in the PLL, the Supply Performance Evaluator then searches the ASL for the part, starting in the Forward ASL (if the unit is a customer of the Forward ASL) and then continuing on to the Main ASL, and finally ordering from wholesale if it is not available at any location (parts for the ASL are also ordered when an ASL line drops to its re-order point). In all cases, the part waits the required order-ship-time (OST) before delivery to the unit/PLL or to the ASL. The OST to the unit/PLL was one day from the ASL, the OST to the Forward ASL from the Main ASL was three days, and the OST to the Main ASL from wholesale was part specific based on data from the DS4 Stock Status report (or 26 days if there was no data for a specific part). After the last part has been requisitioned, the Supply Performance Evaluator determines supply performance statistics for the period examined. These statistics include accommodation (percentage of

requisitions that are on the PLL/ASL), satisfaction (percentage of PLL/ASL requisitions that are 100% filled at the time of the requisition), fill rate (percentage of requisitions that are 100% filled at the time of the requisition) and ASL zero balance rate with due outs (percentage of ASL/PLL lines that are at zero balance with requisitions waiting to be filled at the end of the month). PLLs were also examined for use (percentage of parts with and without demands) during the period and for the number of lines backed up by the ASL.

The readiness impact of eliminating the PLLs was determined for combat/combat support units' primary weapon systems based on the delay required when receiving repair parts from the ASL instead of receiving the part immediately from the PLL. Parts associated with a weapon system were identified using the AMDF Material Category Code (MATCAT).

2. INVENTORY LEVELS

2.1 Authorized Stockage List.

The ASL for the 2nd Armored Division consists of a Main ASL, two Forward ASLs, an Aircraft ASL, and a Missile ASL. Figure 1 shows the size of the ASL locations in terms of number of lines, price, weight, and cube. There is also a count of the total number of unique lines stocked (5,093) for the entire ASL as well as total price ($39.7 million), total weight (5,181 K pounds) and total cube (52 K cubic feet). This is the ASL that was used to determine the supply performance statistics.

2AD ASL

	LINES	PRICE	WT(LBS)	CU(CU FT)
MAIN	3664	$23.3M	4931K	41K
FWD1	768	$ 2.5M	112K	3K
FWD2	750	$ 2.6M	91K	2K
AIRCRAFT	1260	$ 5.4M	36K	5K
MISSILE	203	$ 5.9M	11K	1K
UNIQ LINES	5093	$39.7M	5181K	52K
PLLs UNIQ	3153	$ 3.9M	304K	10K
ASL+PLL UNIQ	7029	$43.6M	5485K	62K

Figure 1
2nd Armored Division Authorized Stockage List

2.2 Prescribed Load List.

Figure 1 also shows the same information for all of the PLLs in the Division. There are 3,153 unique PLL lines (12,122 total PLL lines) in the Division at a cost of $3.9 million with a total weight of 304 thousand pounds and a total cube of 10 thousand cubic feet. There are a total of 98 companies in the Division that are authorized to stock a PLL. Of these 98 companies, 81 PLL files were included in the analysis (17 units did not submit a PLL file). Out of the 81 PLL files, 5 had no authorized lines. Therefore, there are a total of 76 PLL files with authorized lines. A complete listing of the 76 PLLs, in terms of number of lines, total weight, total cube, and total cost, is shown in Appendix A. The number of lines authorized in the PLLs ranged from 1 to 418, with an average of 160 lines per PLL.

2.3 Total Divisional Lines.

The final line in Figure 1 provides the totals for the Division when the PLLs and the ASL are combined. There are 7,029 unique lines at a cost of $43.6 million with a weight of 5,485 thousand pounds and a cube of 62 thousand cubic feet. As can be seen from the number of unique lines, there are 1,936 PLL lines that are not currently stocked in the ASL.

3. SUPPLY PERFORMANCE IMPACT

3.1 Procedure.

The supply performance for the division was calculated using the demand stream from the DS4 PLL Demand History (PLLDH) and the Supply Performance Evaluator. The demands from the PLLDH are linked to a particular PLL based on the Department of Defense Activity Address Code (DODAAC) found in the document number of every requisition on the PLLDH. Using these demands, the supply performance was determined for the PLLs, for the Division as a whole (ASL and PLLs combined) , and for the ASL without the PLLs.

3.2 PLL Supply Performance.

The supply performance for the PLLs is shown in Figure 2. Figure 2 shows the accommodation, satisfaction, and fill rates for repair parts requisitioned by the 76 PLLs with authorized lines. The chart shows the number of PLLs that had a supply performance measure within a certain range. For example, there were 26 PLLs that had an accommodation rate between 10 percent and 19 percent. There were 13 PLLs that had a satisfaction rate between 70 percent and 79 percent and 8 PLLs that had a fill rate between 30 percent and 39 percent. The overall PLL performance was determined by examining all PLL requisition at one time. For example, the overall accommodation rate was calculated by dividing the number of requisitions that were on any PLL by the total number of requisitions. The overall accommodation rate was 21 percent, the overall satisfaction rate was 85 percent, and the overall fill rate was 18 percent.

2AD PLL Supply Performance

Overall PLL
Performance
21% Accom
85% Satis
18% Fill

O F P L L S

Legend:
- ■ Accom
- ■ Satis
- □ Fill

(y-axis: 0, 5, 10, 15, 20, 25, 30)

(x-axis categories: 0-9%, 10-19%, 20-29%, 30-39%, 40-49%, 50-59%, 60-69%, 70-79%, 80-89%, 90-100%)
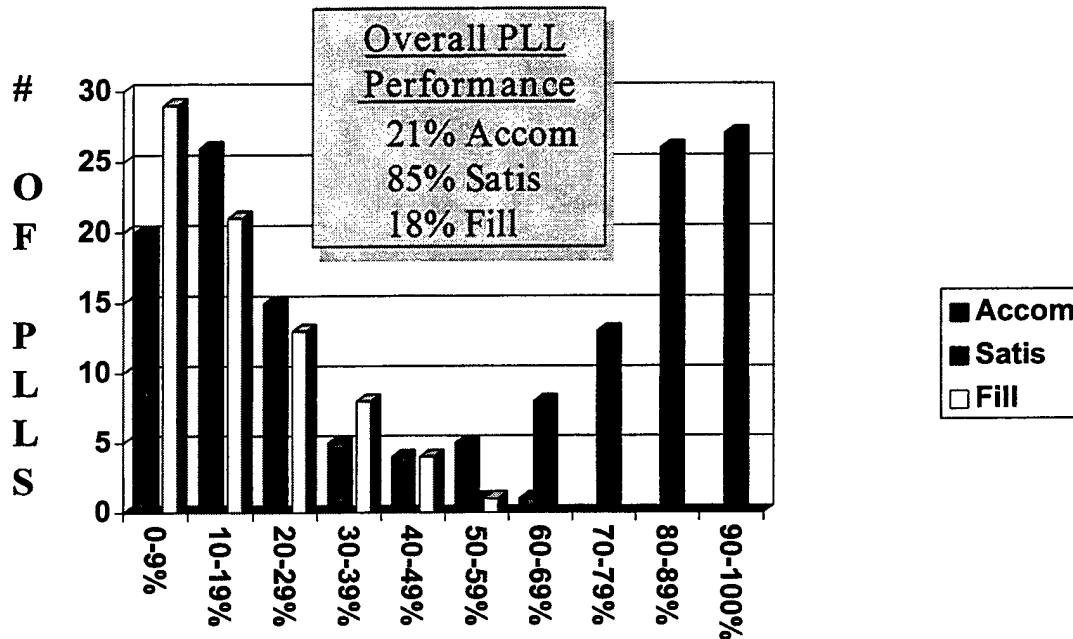
Figure 2. PLL Supply Performance

3.3 ASL Supply Performance.

The supply performance for the division was calculated in two ways; with the PLLs included in the overall ASL average and with the PLLs excluded from the overall ASL average. In actuality, the supply performance of the ASL will not be impacted by the PLLs being included or excluded because all requests from the units go to the ASL (whether it is an actual request or a request to fill the PLL after a part is issued), but the overall division supply performance will be affected by lines stocked in the PLLs that are not stocked in the ASL.

3.3.1 ASL Supply Performance With PLLs.

The overall supply performance for the division with the PLLs included is shown in Figure 3. The supply performance was calculated for the division in two ways; supply performance for all requisitions and supply performance for all AMDF essentiality coded C, D, and E parts requisitioned from the PLLs. The calculated

performance does not include repair parts requisitioned by Direct Support maintenance units within the division or any parts requisitioned by the 22 units with no authorized PLL lines (5 PLLs without authorized lines, 17 PLL files not received). For all requisitions, the accommodation rate was 69%, the satisfaction rate was 84%, and the fill rate was 58%. The zero balance rate with due-outs was 1%, with all of the zero balance lines being in the PLLs. The performance for essential requisitions was 93% accommodation, 86% satisfaction, 80% fill rate, and 1% zero balance rate with due-outs (again, all at the PLL level).

2AD ASL Supply Performance

	2AD w/ PLL		2AD w/ o PLL	
	All Reqs	Ess Reqs	All Reqs	Ess Reqs
Accommodation	69%	93%	60%	85%
Satisfaction	84%	86%	90%	92%
Fill Rate	58%	80%	54%	79%
Zero Balance Rate	1%	1%	0%	0%

* Using PLL demands from Jan 94 - Dec 94
Ess Reqs = Reqs w/ Essentiality Code of C,D,E

Figure 3
2nd Armored Division Supply Performance

3.3.2 ASL Supply Performance Without PLLs.

Figure 3 also shows the supply performance for the division without the PLLs included in the averages. The supply performance without the PLLs was also calculated for all requisitions and for essential requisitions only. The supply performance for all requisitions was 60% accommodation, 90% satisfaction, 54% fill rate, and 0% zero balance with due outs. The supply performance for essential requisitions showed an 85% accommodation rate, 92% satisfaction, 79% fill, and 0% zero balance with due outs.

3.4 Supply Performance Results.

The difference in the accommodation rate between the supply performance with PLLs and without PLLs is due to the 1,936 lines that are stocked in the PLLs but not in the ASL. 1,136 of these 1,936 parts had demands against them, thereby raising the accommodation rate of the supply performance with PLLs. The satisfaction rate without the PLLs was higher because the satisfaction rate for the actual PLLs lowered the overall average for the division when the PLLs were included. The ASL supply performance results for essential requisitions show that there is minimal impact on the overall supply performance in the division when the PLL is not included. The one percent difference in fill rate is due entirely to the 1,136 lines stocked in the PLL that are not in the ASL. In order for the supply performance to be the same in both cases, these lines would have to be added to the ASL at a cost of $1.88 million.

4. PLL USAGE

As stated earlier, AR 710-2 states that a part must have one demand in 180 days to remain on the PLL. Non-demanded parts may be stocked in the PLL with approval from the first general officer staff level in the chain of command, although if there are no demands in four report periods (two years), the part must be deleted from the PLL. Since the results of this study are only for one year, no recommendations can be made for removing parts from the PLLs.

There were 81,858 requisitions during the year from the 76 PLLs. Of these requisitions, 56,482 were for parts on the PLLs. The 56,482 parts were demanded against 4,578 of the 12,122 total PLL parts. This indicates that 7,544 PLL parts did not experience any demands during the year. Figure 4 gives a graphical representation of the non-demanded PLL lines. The figure shows that there were only seven PLLs in the division with less than ten percent of their parts having no demands during the year

NON-DEMANDED PLL LINES

62% OF PLL LINES WERE NOT DEMANDED DURING THE YEAR

| Total lines: | 22 | 40 | 86 | 280 | 377 | 715 | 1151 | 2332 | 1673 | 867 |

% of PLL lines w/o hits
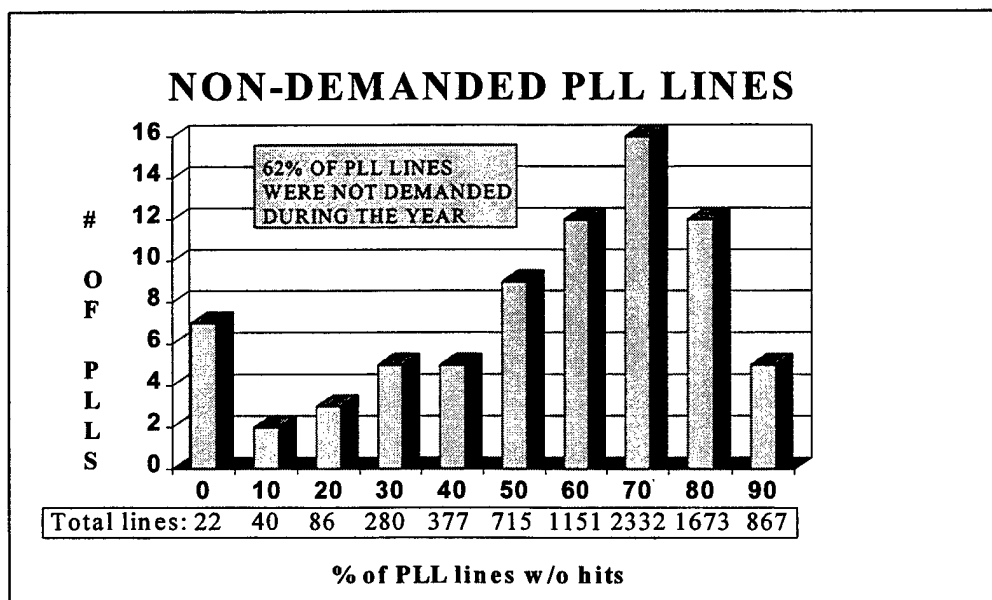
Figure 4
Non-Demanded PLL Lines

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(22 parts total with no demands in the six PLLs). Yet there were 16 PLLs that had between 70 and 79% of their lines with no demands (2,332 parts), and five PLLs that had no demands on over 90% of their lines (868 parts). Overall, 62% of the parts stocked in the PLLs did not have any demands during the year.

5. READINESS IMPACT

Eliminating the unit PLLs will impact readiness in that the unit would be required to wait one day for the part to be issued from the ASL rather than receiving it from the PLL on the day it is required. This assumes that all of the parts that are in the PLLs are in the ASL. As stated earlier, it would cost $1.88 million to include all of the lines currently in the PLLs in the ASL. To assess the readiness impact of eliminating the PLLs, it was assumed that all parts that are in the PLL are essential to the readiness of a weapon system. Parts used from each PLL were group using their AMDF Materiel Category Code (MATCAT). Another assumption made was that the only parts that had an impact on the readiness of a weapon system were the parts that could be identified to that weapon system by MATCAT.

The readiness impact of eliminating the PLLs was determined for the major combat/combat support units of the 2nd Armored Division (except for the 1-14 Infantry Bn - only 1 PLL received). For the armor units, the impact was measured using the M1A1 Abrams Tank, for the cavalry and infantry units the impact on the M2/M3 Infantry/Cavalry Fighting Vehicle was analyzed, and for the field artillery units the impact was measured using the M109A2 Howitzer. The degradation in readiness was calculated by dividing the additional days the weapon system would be "down" (due to the one day wait for the part) by the total possible days the weapon system could be "up" during the year. Following is an example for an armor battalion:

$$\frac{\text{Down Days}}{\text{Total Possible Days}} = \frac{\text{\# of Parts Requested From PLL with MATCAT= ``JE''}}{(58 \text{ M1A1's}) \times (365 \text{ days})}$$

$$\text{3-67 Armor Bn:} \quad \frac{383}{(58) \times (365)} = 0.018 \times 100\% = 1.8\% \text{ drop in readiness}$$

The readiness impact for all of the units is shown in Figure 5. The readiness was calculated assuming that the armor battalions were authorized 58 M1A1's during the entire year, the infantry battalions were authorized 60 M2/M3's, the cavalry squadron was authorized 40 M3's, and the field artillery batteries were authorized 24 M109's.
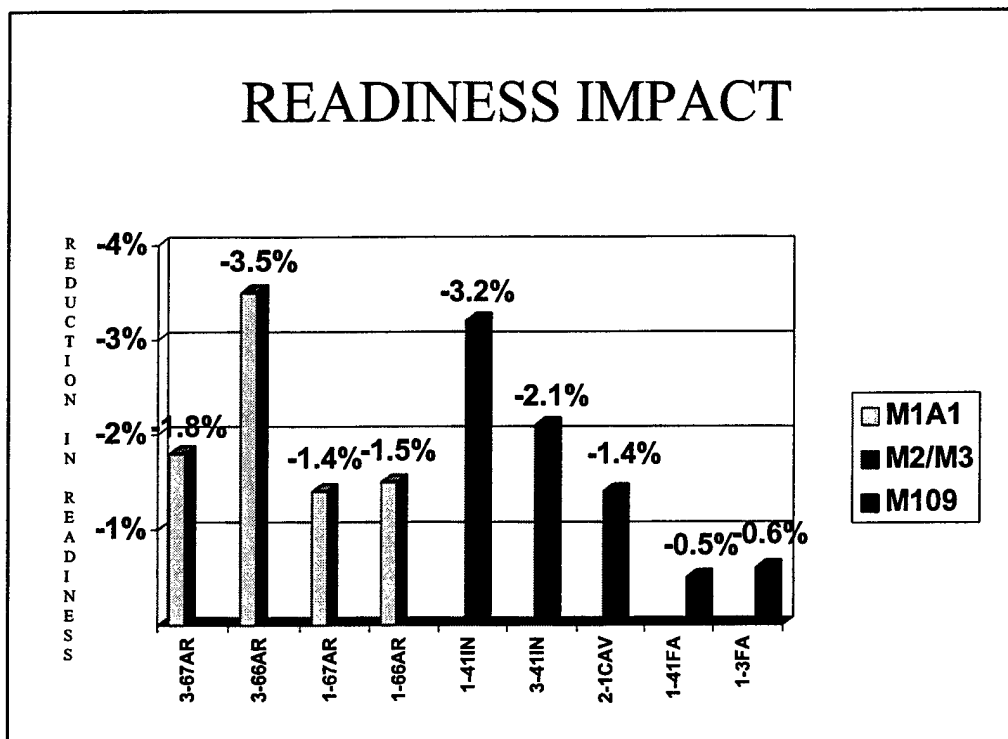
Figure 5
Readiness Impact of Eliminating PLLs

The impact on readiness appears to be minimal for all units except the 3-66 Armor Battalion and the 1-41 Infantry Battalion, although any unit that is marginally meeting the 90% readiness goal could see their readiness drop below 90%.

If the assumption of a one day OST from the ASL to the unit was wrong, and the delivery of parts required two days, the wait to receive the part and subsequent "down" time would be doubled for the results in Figure 5. In this case, all of the units, except the field artillery units, would experience a significant reduction in readiness, ranging from a seven percent drop to a 2.8 percent drop.

6. CONCLUSIONS

- The number of lines in the unit PLLs that did not have demands during the past year (7,544 out of 12,122 total lines) indicate that the PLLs are not being managed properly at the unit level.

- The PLLs were able to provide approximately 1/5 of parts required at the unit level, as documented by the supply performance:

  - •●21% accommodation
  - •●85% satisfaction
  - •●18% fill rate

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- Eliminating the PLLs has a slight impact on the overall supply performance of the division, decreasing the fill rate for essential requisitions from 80% to 79%.

- There would be no impact on the division's supply performance if the 1,136 lines stocked in the PLLs that are not currently in the ASL (and had demands) were added to the ASL (at a cost of $1.88 million).

- The readiness impact of eliminating the PLLs is minimal (in most cases), since there would only be a one day wait to receive the parts from the ASL.

- If the OST to the unit were two days instead of one day, the readiness impact is much greater for all units except the field artillery units, with the drop in readiness ranging from 7% to 2.8%.

APPENDIX C

ACRONYMS

ACR -   Armored Cavalry Regiment

ACWT -   Average Customer Wait Time

AMDF -   Army Master Data File

AMSAA -   Army Material Systems Analysis Activity

ASL -   Authorized Stockage List

BCT -   Brigade Combat Team

BDE -   Brigade

BSA -   Brigade Support Area

CASCOM -   Combined Arms Services Command

EDI -   Electronic Data Interface

FSB -   Forward Support Battalion

GPS -   Global Positioning System

IG -   Inspector General

LOGPAC -   Logistics Package

LOGSA -   Logistics Support Agency

MSB -   Main Support Battalion

MMC -   Material Management Center

MSRT -   Mobile Subscriber Telephone

NSN -   National Stock Number

NIIN -   National Item Identification Number

SAILS -   Standard Army Intermediate Logistics System

SARSS -   Standard Army Retail Supply System

TAMMS -   The Army Maintenance Management System

TAV -   Total Asset Visibility

ULLS -   Unit Level Logistics System

UMCP -   Unit Maintenance Collection Point

APPENDIX D

POISSION PROBABILITIES TABLE

Table A.2 Cumulative Poisson Probabilities

$$F(x; \lambda) = \sum_{y=0}^{x} \frac{e^{-\lambda}\lambda^y}{y!}$$

					λ					
x	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0
0	.905	.819	.741	.670	.607	.549	.497	.449	.407	.368
1	.995	.982	.963	.938	.910	.878	.844	.809	.772	.736
2	1.000	.999	.996	.992	.986	.977	.966	.953	.937	.920
3		1.000	1.000	.999	.998	.997	.994	.991	.987	.981
4				1.000	1.000	1.000	.999	.999	.998	.996
5							1.000	1.000	1.000	.999
6										1.000

					λ						
x	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	15.0	20.0
0	.135	.050	.018	.007	.002	.001	.000	.000	.000	.000	.000
1	.406	.199	.092	.040	.017	.007	.003	.001	.000	.000	.000
2	.677	.423	.238	.125	.062	.030	.014	.006	.003	.000	.000
3	.857	.647	.433	.265	.151	.082	.042	.021	.010	.000	.000
4	.947	.815	.629	.440	.285	.173	.100	.055	.029	.001	.000
5	.983	.916	.785	.616	.446	.301	.191	.116	.067	.003	.000
6	.995	.966	.889	.762	.606	.456	.313	.207	.130	.008	.000
7	.999	.988	.949	.867	.744	.599	.453	.324	.220	.018	.001
8	1.000	.996	.979	.932	.847	.729	.593	.456	.333	.037	.002
9		.999	.992	.968	.916	.830	.717	.587	.458	.070	.005
10		1.000	.997	.986	.957	.901	.816	.706	.583	.118	.011
11			.999	.995	.980	.947	.888	.803	.697	.185	.021
12			1.000	.998	.991	.973	.936	.876	.792	.268	.039
13				.999	.996	.987	.966	.926	.864	.363	.066
14				1.000	.999	.994	.983	.959	.917	.466	.105
15					.999	.998	.992	.978	.951	.568	.157
16					1.000	.999	.996	.989	.973	.664	.221
17						1.000	.998	.995	.986	.749	.297
18							1.000	.999	.993	.819	.381
19								1.000	.997	.875	.470
20									.998	.917	.559
21									.999	.947	.559...
22									1.000	.967	.721
23										.981	.787
24										.989	.843
25										.994	.888
26										.997	.922
27										.998	.948
28										.999	.966
29										1.000	.978
30											.987
31											.992
32											.995
33											.997
34											.999
35											.999
36											1.000

APPENDIX E

Requisitioning Objective And Reorder Point Table

Table G-3
Requisitioning Objective and Reorder Point Table
15 Day Operating Level/15 Day Safety Level

Order and Shipping Time (Days)		3-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	133-144	145-156	157-168	169-180	181-192	193-204	205-216	217-228	229-240	241-252	253-264	265-276	277-288	289-300
																		QUANTITY DEMANDED DURING CONTROL PERIOD (360 DAYS)								
1 THRU 5	RO	2	4	6	8	9	11	12	14	15	17	18	20	22	23	25	27	28	30	32	33	35	36	38	40	41
	ROP	0	1	2	3	5	6	8	10	11	13	14	16	18	19	21	23	24	26	28	29	31	33	34	36	39
	RO→OST	1	3	4	6	7	9	10	12	14	15	17	18	20	22	23	25	26	28	30	31	33	34	36	38	45
6 THRU 10	RO	3	5	7	9	10	12	14	16	17	19	20	22	24	25	27	29	30	32	34	36	38	40	41	42	43
	ROP	1	1	2	3	5	6	8	9	11	12	14	16	17	19	21	22	24	25	27	29	31	36	38	40	53
	RO→OST	1	3	5	7	8	10	12	13	15	16	18	20	21	23	25	26	28	30	31	33	35	36	38	40	43
11 THRU 15	RO	3	6	8	11	13	15	16	18	21	24	26	29	31	34	36	39	41	44	46	49	51	54	56	57	61
	ROP	1	2	3	5	6	8	10	11	13	15	16	18	20	22	24	26	27	30	32	34	36	38	40	42	44
	RO→OST	2	4	6	8	10	12	14	15	17	21	22	24	26	28	31	33	35	37	39	41	43	45	47	59	52
16 THRU 20	RO	3	5	7	9	10	12	14	16	18	21	23	25	27	29	31	33	35	38	40	42	44	47	49	51	53
	ROP	0	1	2	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	23	24	25	26	27
	RO→OST	1	3	5	7	9	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	41	43	44	46	52
21 THRU 25	RO	5	6	8	11	15	18	21	24	27	30	34	37	40	43	46	49	53	56	59	62	65	68	72	75	78
	ROP	2	4	6	8	10	12	13	15	17	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	47
	RO→OST	3	5	7	9	11	13	14	16	18	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	70
26 THRU 30	RO	2	4	6	9	11	13	16	18	21	23	26	28	31	33	36	38	41	43	46	48	51	53	56	59	64
	ROP	1	3	4	5	7	8	9	11	12	14	15	17	18	19	21	22	24	25	27	28	30	31	33	34	35
	RO→OST	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	66
31 THRU 35	RO	3	6	10	14	18	21	25	29	33	37	41	44	48	52	56	60	64	67	71	75	79	83	87	90	94
	ROP	1	3	4	6	7	9	10	12	14	15	17	18	20	22	23	25	26	28	30	31	33	34	36	38	31
	RO→OST	2	4	7	9	12	14	17	20	22	25	27	30	33	35	38	40	43	46	48	51	53	56	59	61	84
36 THRU 40	RO	2	4	7	10	13	16	19	22	24	26	29	32	35	37	40	43	45	49	51	54	57	60	62	65	72
	ROP	1	3	4	6	8	10	12	13	15	17	19	20	22	24	26	27	29	31	33	35	36	38	40	42	42
	RO→OST	2	6	9	14	18	21	25	29	33	36	40	44	48	52	57	61	65	67	77	82	86	90	94	98	102
41 THRU 45	RO	2	5	7	10	13	16	19	22	25	28	31	34	37	40	43	46	49	51	54	57	60	63	66	69	72
	ROP	1	3	5	7	9	11	13	15	17	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	47
	RO→OST	3	7	12	16	21	25	30	34	39	43	48	52	57	61	66	70	75	79	84	88	93	97	102	106	111

APPENDIX F

The Model

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
000000079	WASHER,FLAT	0.07	262	2	0.14		2	41	0.999998735	2.87	24	1.68
000013548	PLUG,PIPE	25.58	0	7	179.06	2		0			0	-
000103867		0.14	15	1	0.14		4	3	0.97834997	0.42	2	0.28
000013530	SPIDER,UNIVERSAL JO	93.18	4	7	652.26		2	1	0.967872109	93.18	1	93.18
000013548		25.58		3	76.74			0			0	-
000115730	WASHER,FLAT	0.15	246	100	15.00		1	38	0.999996215	5.70	22	3.30
000120151	FUSE	0.53	66	43	22.79	40	12	11	0.997218321	5.83	7	3.71
000264767	CKTBREAKER	11.25	5	13	146.25	4	5	1	0.952012263	11.25	2	11.25
000402188	UNIT ASSY AIR	118.00	15	4	472.00		15	3	0.97834997	354.00	2	236.00
000433463		47.14		5	235.70			0			0	-
000446914	LAMP,INCANDESCENT	0.66	316	309	203.94	300	14	49	0.999999804	32.34	28	18.48
000519464	INNER TUBE,PNEUMATI	25.67	2	3	77.01	2	1	1	0.99120316	25.67	1	25.67
000782908	TRACK SHOE ASSEMBLY	71.24	1068	1004	71,524.96	1000	60	164		11,683.36	85	6,055.40
000802012	LAMP,INCANDESCENT	0.30	5	79	23.70	69	2	1	0.952012263	0.30	1	0.30
000826034	FILTER,FLUID	2.14	34	70	149.80	65	15	6	0.989315279	12.84	4	8.56
000830288	RELAY AND HOUSING AS	58.62	1	7	410.34	2	1	1	0.997697513	58.62	1	58.62
000873930	BEARING,ROLLER,TAPE	15.99	45	20	319.80	16	9	7	0.985162972	111.93	5	79.95
000879881	BEARING,ROLLER,TAPE	14.06	48	14	196.84	12	11	8	0.992649063	112.48	6	84.36
000892030		276.00	1	1	276.00			0	1		0	-
001003883	BEARINGXROLLERXTAPE	10.62	2	3	31.86		2	1	0.99120316	10.62	1	10.82
001004471	BEARINGXROLLERXTAPE	11.75	4	13	152.75	10	3	1	0.987872109	11.75	1	11.75
001014194	BEARINGXROLLERXTAPE	42.72	2	7	299.04	3	2	1	0.99120316	42.72	1	42.72
001016493		49.72		4	198.88			0			0	-
001277186		20.23		1	20.23			0	1		0	-
001339629	SWITCH	18.02	1	7	126.14		1	1	0.997697513	18.02	1	18.02
001347835	PARTS KIT FLUID PRES	4.47	63	14	62.58	12	13	10	0.994538167	44.70	7	31.29
001349398	LINER,CVC HELMET LGE	39.90	68	0			19	11	0.996483564	438.90	8	319.20
001350506	EARPHONE	7.32	162	55	402.60	45	19	25	0.999863689	183.00	16	117.12
001411154	SPROCKET WHEEL	66.21	7	7	463.47	4	1	1	0.987872109	66.21	1	66.21
001522033	FILTER ELEMENT,FLUI	10.73	128	26	278.98	25	59	20	0.99982479	214.60	13	139.49
001557784		0.29		53	15.37	43		0	1		0	-
001620387	HOLDER,OPTICAL ELEM	17.47	30	7	122.29	6	27	5	0.980237569	87.35	4	69.88
001639043	PAD SET,FITTING,COM	4.75	14	1	4.75		2	3	0.982667904	14.25	2	9.50
001639046	PAD,BROW,COMBAT VEH	1.15	52	1	1.15		10	8	0.988114721	9.20	6	6.90
001682337	FILTER ELEMENT INTAK	27.49	23	16	439.84	14	17	4	0.978470545	109.96	3	82.47
001727321	SPRING,HELICAL,TORS	0.39	24	2	0.78		10	4	0.972456743	1.56	3	1.17
001744511				1				0	1		0	-
001795526	SHOCK ABSORBER DIRE	262.00	8	8	2,096.00	4	4	2	0.981047516	524.00	2	524.00
002079422	SWITCH ROTARY	16.13	4	7	112.91	5	3	2	0.967872109	16.13	1	16.13
002175782	IGNITER,SPARK,FUEL	56.02	60	48	2,688.96	40	9	10	0.996161113	560.20	7	392.14
002245260	ROD GROUND MX-148/G	37.23	9	1	37.23		8	2	0.974343069	74.46	2	74.46
002254841		10.61		7	74.27	4		0			0	-
002463836		0.05		4	0.20			0	1		0	-
002550775	PARTS KIT,VEHICULAR	166.00	19	30	4,980.00	17	8	3	0.954939486	498.00	3	498.00
002550777	PARTS KIT,VEHICULAR	65.77	110	13	855.01	8	54	17	0.990032656	1,118.09	11	723.47
002610990		99.10		5	495.50			0	1		0	-
002628677		99.10		32	3,171.20	28		0			0	-
002697383	INNER TUBE,PNEUMATI	15.28	96	57	869.82	37	66	15	0.998506291	228.90	10	152.60
002744511	CYLINDER ASSEMBLY H	23.39	32	21	491.19	14	14	5	0.974017768	118.95	4	93.56
002788825		0.18		5	0.90			0			0	-
002836662	SWITCH,THERMOSTAT	90.78	19	20	1,815.60	18	8	3	0.954939486	272.34	3	272.34
002871912	FILTER ELEMENT,FLUI	4.54	79	8	38.32		27	13	0.998352932	59.02	9	40.86
002882988	BRAKE DRUM	61.02	6	2	122.04		1	1	0.939924226	61.02	1	61.02
002952668	LAMP,INCANDESCENT	0.30	34	128	38.40	118	7	6	0.989315279	1.80	4	1.20
003027515	CORD ASSEMBLY,ELECT	38.55	58	26	1,002.30	16	17	9	0.991493796	346.95	7	269.85
003027519	CORD ASSEMBLY,ELECT	8.59	59	45	386.55	33	11	10	0.996060834	85.90	7	60.13
003027521	CORD ASSEMBLY,ELECT	48.28	160	22	1,062.16	19	31	25	0.999904032	1,207.00	15	724.20
003078856	SWITCH ASSEMBLY	60.26	24	22	1,325.72	16	24	10	0.972456743	241.04	3	180.78
003488653		377.00		2	754.00			0	1		0	-
003600595		0.34		2	0.68			0			0	-
003684872	LAMP,INCANDESCENT	10.74	106	50	537.00	43	51	17	0.993958701	182.58	11	118.14
003792815	BELTS,V,MATCHED SET	8.07	24	43	261.01	28	21	4	0.972456743	24.28	3	18.21
003914322	MOTOR WINDSHIELD WIP	28.88	15	23	618.24	22	14	3	0.97834997	80.64	2	53.78
004036776	ADJUSTER, TRACK, VE	99.89	6	5	499.45	3	4	1	0.933924226	99.89	1	99.89
004367329	BEARING,BALL,ANNULA	3.17	13	20	63.40	16	6	2	0.936684899	6.34	2	6.34
004503528	BATTERY,NONRECHARG	37.03	10	16	592.48	15	1	2	0.966530835	74.06	2	74.06
004872775		55.89		4	223.56	3		0			0	-
004890742		0.10		3	0.30			0	1		0	-

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# Of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
005013516	SPRING,HELICAL,COMP	0.12	1		2 $0.24	176	74	1	0.997697513	$0.12	1	$0.12
005496581	TERMINAL,LUG	31.27	756	8	219 $6,848.13	8	7	116	0.981047518	$3,627.32	62	$1,938.74
005286953	BELTS,V,MATCHED SET	7.16	8		10 $71.60	10		2	0.981089752	$14.32	1	$7.16
005371531	BELTS,V,MATCHED SET	5.41	3		12 $64.92		3	3		$5.41	1	$5.41
005496583	TERMINAL,LUG	31.27	198		53 $1,657.31	6	22	31	0.999981712	$869.37	19	$594.13
005552834		0.43			48 $20.64	42		0	1		0	-
005806283	FILTER ELEMENT,FLUI	4.98	146		53 $283.94	43	41	23	0.99853167	$114.54	14	$69.72
005806304	FILTER ELEMENT,FLUI	4.24	61		22 $93.28	20	9	10	0.995069888	$42.40	7	$29.68
005858249	O-RING	0.37	1		3 $1.11		1	1	0.997697513	$0.37	1	$0.37
005122414		1.65			2 $3.30			0			0	-
006169659		3.15			5 $15.75			0	1		0	-
006178418		0.96			5 $4.80			0			0	-
006634773	GASKET	0.11	9		15 $1.65	4	4	2	0.974343069	$0.22	2	$0.22
007789046	HEADLIGHT	28.37	3		11 $312.07	4	2	1	0.981089752	$28.37	1	$28.37
007797951	SEAL,PLAIN ENCASED	23.90	49		57 $1,382.30	25	9	8	0.991666124	$191.20	6	$143.40
007799159	PUMP,ROTARY	87.24	10		12 $1,046.88	6	9	2	0.966530835	$174.48	2	$174.48
007799247		24.49			4 $97.96	3		0	1		0	-
007799657	CUSHION,RUBBER,SPRO	13.13	46		1 $13.13		15	8	0.994347359	$105.04	8	$78.78
006818188		346.47			3 $1,039.41			0	1		0	-
008830598	HORN,ELECTRICAL	30.90	17		2 $61.80		17	3	0.967893141	$92.70	3	$92.70
006901597	PROPELLER SHAFTXFINA	44.64	1		3 $133.92		1	1	0.997697513	$44.64	1	$44.64
006999438	SWITCHES	25.44	4		8 $203.52	5	4	1	0.967872109	$25.44	1	$25.44
007035899		276.00			1 $276.00			0			0	-
007035900		271.00			2 $542.00			0	1		0	-
007056732	TERMINALS	0.89	30		20 $17.80		1	5	0.980237569	$4.45	4	$3.50
007057189	SPRINGXHELICALXCOMP	2.79			2 $5.58		2	1	0.99120316	$2.79	1	$2.79
007061238	SEAL,PLAIN	4.20	97		73 $306.60	71	13	15	0.998345101	$63.00	10	$42.00
007106054	PUMP FUEL ELECTRICA	58.58	1		1 $58.58		1	1	0.997697513	$58.58	1	$58.58
007146156	ABSORBER SHOCK	45.79	1		6 $274.74		1	1	0.997697513	$45.79	1	$45.79
007146157	SPIDER,UNIVERSAL JO	33.90	4		15 $508.50	7	2	1	0.967872109	$33.90	1	$33.90
007227074	PARTS KIT,UNIVERSAL	5.53	18		16 $88.48	13	9	3	0.961730946	$16.59	3	$16.59
007282042		14.88			2 $29.76			0	1		0	-
007320561	SHAFT ASSEMBLY,FLEX	13.94	6		12 $167.28	8	6	1	0.933924226	$13.94	1	$13.94
007320656	KNOB	2.81	26		2 $5.62		10	4	0.983190298	$11.24	4	$11.24
007359542	RELAY,ELECTROMAGNET	30.25	2		8 $242.00	4	2	1	0.99120316	$30.25	1	$30.25
007384280	HUB ASSY TRACK RO	106.00	1		5 $530.00	4	1	1	0.997697513	$106.00	1	$106.00
007389061	RING,SIDE,AUTOMOTIV	34.52	13		9 $310.68	5	8	2	0.936684899	$69.04	2	$69.04
007409017	PINXSTRAIGHT HEADED	2.15	1		3 $6.45		1	1	0.997697513	$2.15	1	$2.15
007411070		59.39			2 $118.78			0	1		0	-
007413492	HOSE ASSEMBLY,RUBBE	4.75			3 $14.25		1	1	0.997697513	$4.75	1	$4.75
007457730	FILTER ELEMENT FLUID	2.19	63		72 $157.68	62	16	10	0.994536167	$21.90	7	$15.33
007539267	CYLINDER ASSEMBLY,H	53.20	14		13 $691.60	10	13	3	0.982667904	$159.60	2	$106.40
007568416	BELT,V	4.19	2		1 $4.19		1	1	0.99120316	$4.19	1	$4.19
007575877	BRACKET ANGLE	1.48	3		3 $4.44		3	1	0.981089752	$1.48	1	$1.48
007667607		30.17			5 $150.85	4		0	1		0	-
007718119	SWITCH PRESSURE	14.51	22		30 $435.30	20	13	4	0.980086231	$58.04	3	$43.53
007727664		46.08			1 $46.08			0			0	-
007821955	GENERATOR ALTERNATI	928.00	35		21 $19,448.00	17	35	6	0.987653182	$5,556.00	4	$3,704.00
007946947	GASKET	3.59	4		2 $7.18		11	1	0.967872109	$3.59	1	$3.59
006047898	FILTER ELEMENT,INTA	12.46	17		16 $199.36	15	11	3	0.967893141	$37.38	3	$37.38
008086072	CONTROL,DIRECTIONAL	32.01	1		6 $192.06	5	1	1	0.997697513	$32.01	1	$32.01
008096913	HOSE ASSEMBLY RUBBE	4.75	5		9 $42.75	5	4	1	0.952012263	$4.75	1	$4.75
008096914		5.81			8 $46.48	4		0	1		0	-
008107082	SPARK PLUG	5.29	72		52 $275.08	34	7	11	0.994546908	$58.19	8	$42.32
008144770	TRANSMITTER,PRESSUR	30.09	4		8 $240.72	2	4	1	0.967872069	$30.09	1	$30.09
008145271	TRANSMITTERXTEMPER	5.25	22		5 $28.25	1	10	4	0.880086231	$21.00	3	$15.75
008233832	CX-4723/U	63.84	5		1 $63.84		2	2	0.952012263	$63.84	1	$63.84
008288729	HOSE,NONMETALLIC	2.51	7		12 $30.12	7	7	2	0.986843424	$5.02	1	$2.51
008306660	GENERATOR	2,911.00	2		3 $8,733.00	2	2	1	0.99120316	$2,911.00	1	$2,911.00
008306672	CABLE ASSEMBLY,SPEC	35.02	11		4 $140.08	2	10	2	0.857628069	$70.04	2	$70.04
008340507	BELTS,V,MATCHED SET	7.44	3		38 $267.84	15	3	1	0.981089752	$7.44	1	$7.44
008491033	BELT,V	4.61	8		22 $101.42	14	8	1	0.981047518	$9.22	2	$9.22
008491220	COCK,DRAIN	0.62	58		54 $33.48	53	7	9	0.991493798	$5.58	1	$4.34
008543733	HOSE PREFORMED	17.64	8		12 $211.68	7	6	1	0.93392426	$17.64	1	$17.64
008553938		8.81			3 $26.43			0			0	-
008582728	ANTENNA ELEMENT	22.82	5		2 $45.64		1	1	0.952012263	$22.82	1	$22.82
008807348	PARTS,KIT,TRACK CEN	15.66	47		15 $234.90	9	4	8	0.993540951	$125.28	8	$93.96
008626939	RADIATOR,ENGINE COO	241.00	14		8 $1,928.00	7	14	3	0.982667904	$723.00	2	$482.00

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008659788		$ 16.89		7	$ 118.23			0		$ -	0	$ -
008786734		$ 24.15		4	$ 96.60			0		$ -	0	$ -
008819399	SWITCH,THERMOSTATIC	$ 33.43	6	2	$ 66.88		6	1	0.933924226	$ 33.43	1	$ 33.43
008841211		$ 6.06		14	$ 84.84	12		1		$ -	0	$ -
008844801	PARTS KIT,FLUID PRE	$ 10.92	16	24	$ 262.08	20	4	3	0.97429838	$ 32.76	3	$ 32.76
008917826	SEAL,PLAIN ENCASED	$ 3.47	112	3	$ 10.41		18	18	0.99953374	$ 62.46	11	$ 38.17
008929311	FUSEHOLDER,EXTRACTO	$ 2.86	8	10	$ 28.60	8	6	2	0.981047516	$ 5.72	2	$ 5.72
009001903	CIRCUIT BREAKER	$ 1.55	10	8	$ 12.40	6	3	2	0.966530035	$ 3.10	2	$ 3.10
009001904	CIRCUIT BREAKER	$ 3.28	8	6	$ 19.68	4	2	2	0.981047518	$ 6.56	2	$ 6.56
009007993	REGULATOR	$ 244.00	28	17	$ 4,148.00	2	23	4	0.963190298	$ 976.00	4	$ 976.00
009081115		$ 176.00		2	$ 352.00			0		$ -	0	$ -
009092453	INDICATOR AIR CLEANE	$ 10.22	7	11	$ 112.42	8	7	1	0.988643424	$ 20.44	1	$ 10.22
009092483	GENERATOR ENGINE	$ 328.00	77	37	$ 12,136.00	31	76	12	0.996461527	$ 3,936.00	8	$ 2,624.00
009215004	MAGAZINE ASSEMBLY,5	$ 8.23	10	134	$ 1,102.82	100	1	2	0.966530035	$ 16.46	2	$ 16.48
009234248	PUMP,FUEL,ELECTRICA	$ 117.00	35	11	$ 1,287.00	5	19	6	0.997653192	$ 702.00	4	$ 468.00
009309367		$ 55.53		15	$ 832.95	9		0		$ -	0	$ -
009329634	HEAD,FLUID FILTER	$ 16.91	2	5	$ 84.55	5	2	1	0.99120316	$ 16.91	1	$ 16.91
009333600	INDICATOR,LIQUID QU	$ 13.37	12	19	$ 254.03	18	12	2	0.947665538	$ 26.74	2	$ 26.74
009362139	METER,SPECIAL SCALE	$ 11.54	5	11	$ 126.94	8	5	1	0.952012263	$ 11.54	1	$ 11.54
009371851	MICROPHONE,DYNAMIC	$ 11.76	324	58	$ 682.08	49	50	50	0.999999826	$ 588.00	29	$ 341.04
009372250	SWAB HOLDER SECTION,	$ 0.30	221	21	$ 6.30		50	34	0.999998833	$ 10.20	20	$ 6.00
009381539	SCREW,CAP HEXAGON H	$ 0.49	13	44	$ 21.56	38	4	2	0.936684999	$ 0.98	2	$ 0.98
009388212	INDICATOR,PRESSURE	$ 10.26	4	1	$ 10.26	1	3	1	0.967872109	$ 10.28	1	$ 10.28
009441660	SWITCH,PRESSURE	$ 16.87	22	10	$ 168.70		8	4	0.980086231	$ 67.48	3	$ 50.61
009581214	TERMINAL	$ 15.60	29	24	$ 374.40	14	8	5	0.982929912	$ 78.00	4	$ 62.40
009613596	SEAL,PLAIN	$ 5.76	28	16	$ 92.16	11	3	5	0.985358864	$ 28.80	4	$ 23.04
009615547		$ 0.05			$ 0.05			0		$ -	0	$ -
009663831	LAMP,INCANDESCENT	$ 12.05	78	38	$ 457.90	35	56	12	0.99682277	$ 144.60	8	$ 98.40
009830998	FILTER ELEMENT,FLUI	$ 10.58	97	80	$ 846.40	60	8	15	0.998345101	$ 158.70	10	$ 105.80
009832873	BELTS,V,MATCHED SET	$ 5.79	7	17	$ 98.43	15	6	2	0.986643424	$ 11.58	1	$ 5.79
009845180	HEADLIGHT	$ 56.46	19	10	$ 564.60	7	12	3	0.954939486	$ 169.38	3	$ 169.38
009859022	ANTENNA ELEMENT FIBE	$ 46.13	6	14	$ 645.82	6	2	1	0.933924226	$ 46.13	1	$ 46.13
009927291		$ 0.44		1	$ 0.44			0		$ -	0	$ 0.14
009935546	TRANSMITTER,PRESSUR	$ 33.77	15	5	$ 168.85	5	10	3	0.97834997	$ 101.31	2	$ 67.54
009992549	PREHEATER ASSEMBLY	$ 11.36	86	1	$ 11.36	1	7	14	0.998660404	$ 159.04	9	$ 102.24
010271564		$ 198.12		6	$ 1,188.72	2		0		$ -	0	$ -
010288573	SHOCK ABSORBER,DIRE	$ 81.29	52	47	$ 3,820.63	10	15	8	0.988114721	$ 650.32	6	$ 487.74
010319027	STARTER,ENGINE,ELEC	$ 295.00	3	10	$ 2,950.00	9	3	1	0.981089752	$ 295.00	1	$ 295.00
010328152	SUPPRESSOR,FLASH	$ 8.18	2	2	$ 16.36		2	1	0.99120316	$ 8.18	1	$ 8.18
010333887	PIN,SPRING	$ 0.14	1	1	$ 0.14		1	1	0.997697513	$ 0.14	1	$ 0.14
010334538		$ 55.74		2	$ 111.48			0		$ -	0	$ -
010341147	HUB ASSEMBLY,SUSPEN	$ 55.55	1	3	$ 166.65	2	1	1	0.997697513	$ 55.55	1	$ 55.55
010386829	AMMETER	$ 67.84	5	3	$ 203.52	2	5	1	0.952012263	$ 67.84	1	$ 67.84
010405546	STARTER,ENGINE,ELEC	$ 212.99	28	6	$ 1,277.94	5	28	5	0.985358864	$ 1,064.95	4	$ 851.96
010433872		$ 77.87		13	$ 1,012.31	8		0		$ -	0	$ -
010489075	STATOR,ENGINE GENER	$ 51.53	9	2	$ 103.06	2	5	2	0.974343069	$ 103.06	2	$ 103.06
010504911	EYE CUP INFLATABLE	$ 15.38	12	2	$ 30.76	2	12	2	0.947665538	$ 30.76	2	$ 30.76
010507544	HOSE ASSEMBLY,NONME	$ 27.12	8	10	$ 271.20	7	8	2	0.981047516	$ 54.24	2	$ 27.12
010514900	BATTERY,STORAGE	$ 68.20	604	395	$ 26,939.00	391	187	93	1	$ 6,342.60	50	$ 3,410.00
010540479	REGULATOR,ENGINE GE	$ 474.00	7	6	$ 2,844.00	3	7	1	0.988643424	$ 948.00	8	$ 474.00
010602551	SEAL,PLAIN ENCASED	$ 49.06	71	32	$ 1,569.92	15		11	0.99509589	$ 539.68	8	$ 392.48
010614294	RADIATOR,ENGINE COO	$ 625.00	6	4	$ 2,500.00	3	6	1	0.833924226	$ 625.00	1	$ 625.00
010635666	HUB,WHEEL,VEHICULAR	$ 235.00	1	6	$ 1,410.00	2		1	0.997697513	$ 235.00	1	$ 235.00
010635838	TORSION BAR,SUSPENS	$ 436.05	2	3	$ 1,308.15	3	2	1	0.99120318	$ 436.05	1	$ 436.05
010635862	HUB CAP,WHEEL	$ 12.07	4	12	$ 144.84	5	4	1	0.967872109	$ 12.07	1	$ 12.07
010637559	CONTROL ASSEMBLY,PU	$ 20.13	4	9	$ 181.17	6	4	1	0.967872109	$ 20.13	1	$ 20.13
010638926		$ 276.00		4	$ 1,104.00			0		$ -	0	$ -
010648137		$ 17.10		2	$ 34.20			0		$ -	0	$ -
010656208	SEAL,PLAIN ENCASED	$ 76.83	20	11	$ 845.13	4	13	4	0.986180769	$ 307.32	3	$ 230.49
010656209		$ 503.00		2	$ 1,006.00			0		$ -	0	$ -
010656264	THERMOSTAT,FLOW CO	$ 11.34	6	1	$ 11.34		3	1	0.933924226	$ 11.34	1	$ 11.34
010656265	BELTS,V,MATCHED SET	$ 32.54	32	31	$ 1,008.74	18	25	5	0.974017766	$ 162.70	4	$ 130.16
010663926	BELTS,V,MATCHED SET	$ 4.96	15	32	$ 158.72	22	11	3	0.97834997	$ 14.88	2	$ 9.92
010672320	WASHER,KEY	$ 2.61	6	2	$ 2.61		3	1	0.933924226	$ 2.61	1	$ 2.61
010673446		$ 18.17		2	$ 36.34			0		$ -	0	$ -
010673510	O-RING	$ 0.47	7	1	$ 0.47		5	1	0.986643424	$ 0.94	1	$ 0.47
010673839	COOLER,LUBRICATING	$ 39.74		1	$ 39.74			0		$ -	0	$ -
		$ 1,123.00	2	2	$ 2,246.00		2	1	0.99120316	$ 1,123.00	1	$ 1,123.00

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010673874		$ 869.00			$ 2,607.00	3	2	0	1	$ -	0	$ -
010673899	CLUTCH ASSEMBLY,FRI	$ 441.00	2		$ 1,323.00	3	2	1	0.99120316	$ 441.00	1	$ 441.00
010690483	DRIVE UNIT,ANGLE	$ 742.00	3		$ 1,484.00	2	3	1	0.981089752	$ 742.00	1	$ 742.00
010690484		$ 744.00			$ 1,488.00	2		0	1	$ -	0	$ -
010696997	STARTER,ENGINE,ELEC	$ 360.00	1		$ 360.00	1	1	1	0.997697513	$ 360.00	1	$ 360.00
010729931	SENSOR,FIRE	$ 646.00	1		$ 3,876.00	3	1	1	0.997697513	$ 646.00	1	$ 646.00
010729932		$ 2,019.00			$ 4,038.00	2		0	1	$ -	0	$ -
010730076	PUMP,AXIAL PISTONS	$ 5,116.00	10		$ 5,116.00	1	10	2	0.966530835	$ 10,232.00	2	$ 10,232.00
010730101	CYLINDER,ACTUATING,	$ 33.02	1		$ 99.06	3	1	1	0.997697513	$ 33.02	1	$ 33.02
010733185		$ 867.00			$ 867.00	1		0	1	$ -	0	$ -
010734289	PUMP UNIT,ROTARY	$ 902.00	3		$ 902.00	1	3	1	0.981089752	$ 902.00	1	$ 902.00
010743494		$ 382.00			$ 1,910.00	5		0	1	$ -	0	$ -
010743495	CONTROL ASSEMBLY,PU	$ 442.00	4		$ 2,652.00	3	4	1	0.967872109	$ 442.00	1	$ 442.00
010744946		$ 152.00			$ 608.00	4		0	1	$ -	0	$ -
010748946	IMAGE CONTROL UNIT	$ 18,648.00	2		$ 18,648.00	1	2	1	0.99120316	$ 18,648.00	1	$ 18,648.00
010755298	TRANSMITTER,PRESSUR	$ 20.85	3		$ 83.40	4	2	1	0.981089752	$ 20.85	1	$ 20.85
010766740	GRIP ASSEMBLY,CONTR	$ 1,956.00	1		$ 5,868.00	3	1	1	0.997697513	$ 1,956.00	1	$ 1,956.00
010766742	GYRO ASSEMBLY,RATE	$ 2,003.00	2		$ 14,021.00	7	2	1	0.99120316	$ 2,003.00	1	$ 2,003.00
010766865	GRIP ASSEMBLY,CONTR	$ 2,220.00	1		$ 6,660.00	3	1	1	0.997697513	$ 2,220.00	1	$ 2,220.00
010777793	SWITCH,THERMOSTATIC	$ 7.96	18		$ 127.36	16	3	3	0.961730948	$ 23.88	3	$ 23.88
010792910		$ 138.68			$ 138.68	1		0	1	$ -	0	$ -
010794637	SWITCH ASSEMBLY,IGN	$ 47.45	13		$ 854.10	18	13	2	0.936684899	$ 94.90	2	$ 94.90
010805680	VALVE,SAFETY RELIEF	$ 551.69	3		$ 551.69	1	3	1	0.981089752	$ 551.69	1	$ 551.69
010833070	GASKET	$ 3.38	15		$ 6.76	2	4	3	0.97834097	$ 10.14	2	$ 6.76
010833153	PUMP FUEL,ELECTRICA	$ 356.00	1		$ 712.00	2	1	1	0.997697513	$ 356.00	1	$ 356.00
010834672	GAGE,PRESSURE,DIAL	$ 58.32	2		$ 58.32	1	2	1	0.99120316	$ 58.32	1	$ 58.32
010835556	SWITCH,PRESSURE	$ 161.84	3		$ 647.36	4	3	1	0.981089752	$ 161.84	1	$ 161.84
010839011		$ 538.00			$ 538.00	1		0	1	$ -	0	$ -
010844865		$ 82.05			$ 328.20	4		0	1	$ -	0	$ -
010852914	TRANSMITTER,TEMPERA	$ 5.96	2		$ 11.92	2	2	1	0.99120316	$ 5.96	1	$ 5.96
010894891		$ 5,133.00			$ 5,133.00	1		0	1	$ -	0	$ -
010897649	SOLENOID,ELECTRICAL	$ 599.77	2		$ 3,598.62	6	2	1	0.99120316	$ 599.77	1	$ 599.77
010897789	SHAFT,STRAIGHT	$ 128.87			$ 644.35	5	1	7	0.997697513	$ 128.87	1	$ 128.87
010904490	AIR CLEANER,INTAKE	$ 119.00	44		$ 119.00	1	16	7	0.986850204	$ 833.00	5	$ 595.00
010906695	PULLEY,GROOVE	$ 67.05	2		$ 268.20	4	1	1	0.99120316	$ 67.05	1	$ 67.05
010963703		$ 78.55			$ 235.65	3		0	1	$ -	0	$ -
010986807	SEAL,NONMETALLIC ST	$ 10.26	4		$ 41.04	4	1	1	0.967872109	$ 10.26	1	$ 10.26
010987391		$ 294.67			$ 1,178.68	4		0	1	$ -	0	$ -
010985312	HOSE ASSEMBLY,NONME	$ 29.22	1		$ 204.54	7	1	1	0.997697513	$ 29.22	1	$ 29.22
010987326	HOSE ASSEMBLY,NONME	$ 29.10	2		$ 203.70	7	2	1	0.99120316	$ 29.10	1	$ 29.10
010987395		$ 248.60			$ 248.60	1		0	1	$ -	0	$ -
010987398		$ 378.48			$ 2,649.36	7		0	1	$ -	0	$ -
010996331	SEAL,NONMETALLIC SP	$ 143.71	3		$ 1,437.10	10	3	1	0.981089752	$ 143.71	1	$ 143.71
011024531	HUB,BODY	$ 467.82	1		$ 1,403.46	3	1	1	0.997697513	$ 467.82	1	$ 467.82
011024532		$ 269.65			$ 1,078.60	4		0	1	$ -	0	$ -
011024536	IDLER ARM,STEERING,	$ 324.08	1		$ 324.08	1	1	1	0.997697513	$ 324.08	1	$ 324.08
011024538		$ 820.74			$ 4,103.70	5		0	1	$ -	0	$ -
011024539	ROD,STRAIGHT,HEADLE	$ 6.87	1		$ 13.74	2	1	1	0.997697513	$ 6.87	1	$ 6.87
011024540	TRACK ADJUSTER	$ 233.00	8		$ 1,165.00	5	8	2	0.981047518	$ 466.00	2	$ 466.00
011024645		$ 19.90			$ 298.50	15		0	1	$ -	0	$ -
011024681	SEAL,PLAIN	$ 15.92	4		$ 47.76	3	4	1	0.967872109	$ 15.92	1	$ 15.92
011024682		$ 30.14			$ 120.56	4		0	1	$ -	0	$ -
011024684		$ 218.71			$ 1,093.55	5		0	1	$ -	0	$ -
011024713	WHEEL,SOLID RUBBER	$ 107.00	2		$ 1,070.00	10	2	1	0.99120316	$ 107.00	1	$ 107.00
011024742	HUB,WHEEL,VEHICULAR	$ 123.00	4		$ 738.00	6	3	1	0.967872109	$ 123.00	1	$ 123.00
011024765	SPINDLE,WHEEL,DRIVI	$ 397.31	2		$ 397.31	1	2	1	0.981089752	$ 397.31	1	$ 397.31
011024769	HUB CAP,WHEEL	$ 23.32	8		$ 279.84	12	8	2	0.981047518	$ 46.64	1	$ 23.32
011024770		$ 45.62			$ 228.10	5		0	1	$ -	0	$ -
011053324		$ 54.44			$ 871.04	16		0	1	$ -	0	$ -
011054026		$ 913.32			$ 913.32	1		0	1	$ -	0	$ -
011067911	WIRING HARNESS	$ 229.00	4		$ 916.00	4	4	1	0.967872109	$ 229.00	1	$ 229.00
011068205		$ 117.00			$ 351.00	3		0	1	$ -	0	$ -
011073397	SHAFT,SHOULDERED	$ 40.00	3		$ 200.00	5	3	1	0.981089752	$ 40.00	1	$ 40.00
011079902	FAN ASSEMBLY,VENTIL	$ 2,064.00	11		$ 14,448.00	7	11	2	0.957628069	$ 4,128.00	2	$ 4,128.00
011081729		$ 92.57			$ 92.57	1		0	1	$ -	0	$ -
011092064	PARTS KIT,FLUID PRE	$ 70.30	55		$ 1,124.80	16	24	9	0.994000027	$ 632.70	6	$ 421.80
011097960	SWITCH,PRESSURE	$ 73.07	9		$ 365.35	5	9	2	0.974343069	$ 146.14	2	$ 146.14
011097961	SWITCH,PUSH	$ 119.79	4		$ 359.37	3	3	1	0.967872109	$ 119.79	1	$ 119.79

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
011104213		$ 121.00		6	$ 726.00			0	0	$ -	0	$ -
011104214		$ 97.89		7	$ 685.23			0	0	$ -	0	$ -
011104320	SHAFT,SHOULDERED	$ 53.43	1	3	$ 160.29		1	1	0.997697513	$ 53.43	1	$ 53.43
011112277		$ 800.00		1	$ 800.00			0	0	$ -	0	$ -
011122334		$ 181.00		1	$ 181.00			0	1	$ -	0	$ -
011122795		$ 654.21		8	$ 5,233.68			0	1	$ -	0	$ -
011130321	ROD SECTION,CLEANIN	$ 1.59	109	10	$ 15.90		2	17	0.999125149	$ 27.03	11	$ 17.49
011132900	FUSE,CARTRIDGE	$ 1.02	4	15	$ 15.30		1	1	0.967872109	$ 1.02	1	$ 1.02
011147689	YOKE,UNIVERSAL JOIN	$ 63.04	1	5	$ 315.20		1	1	0.997697513	$ 63.04	1	$ 63.04
011152682	BELT,V	$ 7.57	4	2	$ 15.14		3	1	0.967872109	$ 7.57	1	$ 7.57
011155544		$ 11.91		1	$ 11.91			0	0	$ -	0	$ -
011182868	PARTS KIT,FLUID PRE	$ 59.57	32	8	$ 476.56	3	27	5	0.974017766	$ 297.85	4	$ 238.28
011182869		$ 42.88		25	$ 1,072.00	17		0	1	$ -	0	$ -
011209805		$ 103.67		3	$ 311.01			0	1	$ -	0	$ -
011225136		$ 27.91		2	$ 55.82			0	1	$ -	0	$ -
011264268		$ 362.00		1	$ 362.00			0	1	$ -	0	$ -
011228200		$ 81.01		2	$ 162.02			0	1	$ -	0	$ -
011229633	SCREW,CAP,SOCKET HE	$ 0.36	2.63	2	$ 0.72		5	1	0.985219716	$ 0.36	1	$ 0.36
011236782	NUT,DOWEL	$ 3.85	50	11	$ 42.35		4	8	0.990586516	$ 30.80	6	$ 23.10
011236829		$ 12.43		1	$ 12.43			0	1	$ -	0	$ -
011249310		$ 144.87		11	$ 1,593.57	2		0	1	$ -	0	$ -
011251422		$ 9.14		7	$ 63.98	3		0	1	$ -	0	$ -
011261576	TIRE,PNEUMATIC,VEHI	$ 630.00	46	14	$ 8,820.00	10	24	8	0.994347359	$ 5,040.00	6	$ 3,780.00
011267799	SHAFT,STRAIGHT	$ 14.44	6	2	$ 28.88	4	4	1	0.933924226	$ 14.44	1	$ 14.44
011276491	REGULATOR,VOLTAGE	$ 517.12	3	4	$ 2,068.48	2	3	1	0.981089752	$ 517.12	1	$ 517.12
011285746	WIRING HARNESS,BRAN	$ 538.00	1	1	$ 538.00		1	1	0.997697513	$ 538.00	1	$ 538.00
011289954	PLUG,PROTECTIVE,DUS	$ 4.06	21	1	$ 4.06		5	4	0.983317653	$ 16.24	3	$ 12.18
011292159	YOKE,UNIVERSAL JOIN	$ 453.00	1	6	$ 2,718.00	5	1	1	0.997697513	$ 453.00	1	$ 453.00
011292160		$ 785.00		8	$ 6,280.00			0	1	$ -	0	$ -
011314931	GENERATOR,ENGINE AC	$ 474.84	4	8	$ 3,798.72	2	4	1	0.967872109	$ 474.84	1	$ 474.84
011314932		$ 569.49		4	$ 2,277.96			0	1	$ -	0	$ -
011319693		$ 93.69		4	$ 374.76	2		0	1	$ -	0	$ -
011323369	BOLT,SHEAR	$ 1.20	277	70	$ 84.00	40	14	43	0.999999088	$ 51.60	25	$ 30.00
011350992		$ 29.77		7	$ 208.39	2		0	1	$ -	0	$ -
011367617	SENSOR,FIRE DETECT	$ 1,067.17	2	6	$ 6,403.02	2	2	1	0.99120316	$ 1,067.17	1	$ 1,067.17
011393722	STARTER,ENGINE,ELEC	$ 719.00	12	8	$ 5,752.00	4	12	2	0.947665538	$ 1,438.00	2	$ 1,438.00
011393748	WHEEL,SOLID RUBBER	$ 74.77	25	20	$ 1,495.40	15	14	4	0.968033147	$ 299.08	3	$ 224.31
011404555		$ 1.20		9	$ 10.80			0	1	$ -	0	$ -
011428249		$ 1,711.00		1	$ 1,711.00			0	1	$ -	0	$ -
011428251	SHIFT CONTROL ASSY	$ 709.00	8	2	$ 1,418.00	2	8	2	0.981047516	$ 1,418.00	2	$ 1,418.00
011438207		$ 2.52		10	$ 25.20			0	1	$ -	0	$ -
011442314		$ 647.81		1	$ 647.81			0	1	$ -	0	$ -
011428288		$ 5,133.00		3	$ 15,399.00			0	1	$ -	0	$ -
011448674		$ 97.83		5	$ 489.15	3		0	1	$ -	0	$ -
011451878	RELAY,ELECTROMAGNET	$ 16.52	6	5	$ 82.60	3	3	1	0.933924226	$ 16.52	1	$ 16.52
011471565	BELT,V	$ 23.32	9	5	$ 116.60	4	8	2	0.974343069	$ 46.64	2	$ 46.64
011498302		$ 27,199.00		2	$ 54,398.00			0	1	$ -	0	$ -
011512447	MOTOR,DIRECT CURREN	$ 36.42	3	8	$ 291.36	4	3	1	0.981089752	$ 36.42	1	$ 36.42
011567533		$ 47.12		1	$ 47.12			0	1	$ -	0	$ -
011591853		$ 325.00		6	$ 1,950.00	2		0	1	$ -	0	$ -
011613815	CABLE ASSEMBLY,SPEC	$ 128.00	4	2	$ 256.00		3	1	0.967872109	$ 128.00	1	$ 128.00
011613816	CABLE ASSEMBLY,SPEC	$ 132.00	25	14	$ 1,848.00		9	4	0.968033147	$ 528.00	3	$ 396.00
011635009	CONTROL ASSEMBLY,PU	$ 30.24	5	11	$ 332.64	6	5	1	0.952012263	$ 30.24	1	$ 30.24
011648552	SEAL,PLAIN ENCASED	$ 4.99	51	34	$ 169.66	11	9	8	0.989404596	$ 39.92	7	$ 34.93
011650567	INNER TUBE,PNEUMATI	$ 61.81	19	15	$ 927.15	10	15	3	0.954939486	$ 185.43	3	$ 185.43
011677248		$ 47.33		4	$ 189.32	4		0	0	$ -	0	$ -
011687868		$ 122.00		2	$ 244.00			0	0	$ -	0	$ -
011687870	IMPELLER,FAN,AXIAL	$ 229.00	7	4	$ 916.00	2	7	2	0.986843424	$ 458.00	1	$ 229.00
011687876	PUMP ASSEMBLY,POWE	$ 44.57	12	14	$ 623.98	10	12	2	0.947665538	$ 89.14	1	$ 89.14
011687891	STARTER,ENGINE,ELEC	$ 341.00	68	21	$ 7,161.00	15	67	11	0.996483564	$ 3,751.00	8	$ 2,728.00
011688689	HOSE ASSEMBLY,NONME	$ 80.11	2	4	$ 320.44		2	1	0.99120318	$ 80.11	1	$ 80.11
011693168	STEERING GEAR	$ 109.00	4	8	$ 872.00	6	4	1	0.967872109	$ 109.00	1	$ 109.00
011714746	TIRE,PNEUMATIC	$ 140.00	174	57	$ 7,980.00	50	99	27	0.999937357	$ 3,780.00	17	$ 2,380.00
011714774		$ 9,614.00		4	$ 38,456.00			0	0	$ -	0	$ -
011748145	SEAL,PLAIN ENCASED	$ 3.75	47	40	$ 150.00	30	14	8	0.993540951	$ 30.00	6	$ 22.50
011748146		$ 3.33		11	$ 36.63			0	0	$ -	0	$ -
011757214	COIL,ELECTRICAL	$ 34.37	174	78	$ 2,680.86	34	110	27	0.999937357	$ 927.99	17	$ 584.29
011760923	PACKING,PREFORMED	$ 1.50	167	42	$ 63.00	40	16	26	0.999922455	$ 39.00	16	$ 24.00

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
011766085	CHUTE,AMMUNITION	$1,078.00	9	7	$7,532.00	3	3	2	0.974343069	$2,152.00	2	$2,152.00
011766086		$929.00		5	$4,645.00	2	2	1		$ -	0	$ -
011791059	EXTINGUISHER,FIRE	$747.00	16	23	$17,181.00	15	9	3	0.973429836	$2,241.00	3	$2,241.00
011791278	BEARING,WASHER,THRU	$15.30	4	1	$15.30		4	1	0.967872109	$15.30	1	$15.30
011791279		$6.48		1	$6.48			0	1	$ -	0	$ -
011791418		$978.00		3	$2,934.00	2	2	0		$ -	0	$ -
011797523	PANEL,VEHICULAR OPE	$4,285.00	1	8	$34,120.00	7	1	1	0.997697513	$4,285.00	1	$4,285.00
011797589	CYLINDER,HYDRAULIC	$91.11	2	6	$546.66	2	2	1	0.991203186	$91.11	1	$91.11
011797606	BELTS,V,MATCHED SET	$3.16	10	1	$3.16		7	2	0.966530835	$6.32	2	$6.32
011806542	METER,ARBITRARY SCA	$16.61	2	2	$33.22		2	1	0.991203186	$16.61	1	$16.61
011809037	GAGE,PRESSURE,DIAL	$14.71	12	2	$29.42		7	2	0.947665538	$29.42	2	$29.42
011809099	SEAL,PLAIN	$3.64	90	56	$203.84	35	21	14	0.99794137	$50.96	10	$36.40
011811757	GAGE,PRESSURE,DIAL	$13.14	5	15	$197.10	12	5	1	0.952012263	$13.14	1	$13.14
011836637	SWITCH,THERMOSTATIC	$18.01	32	2	$36.02		11	5	0.974017766	$90.05	4	$72.04
011849821		$7.59		1	$7.59			0	1	$ -	0	$ -
011871045		$4,807.00		3	$14,421.00	2		0	1	$ -	0	$ -
011879719		$396.72		2	$793.44			0	1	$ -	0	$ -
011883863		$4.58		16	$73.28			0	1	$ -	0	$ -
011883684	PARTS KIT,BALL JOIN	$34.18	26	27	$922.86	15	12	4	0.963190298	$136.72	4	$136.72
011883685	PARTS KIT,BALL JOIN	$34.75	42	8	$278.00		24	7	0.989797906	$243.25	5	$173.75
011883775	FILTER ELEMENT,FLUI	$3.11	6	16	$49.76		6	1	0.933924226	$3.11	1	$3.11
011883776	FILTER ELEMENT,INTA	$19.61	58	41	$804.01	40	21	9	0.991493796	$176.49	7	$137.27
011883863	GLOW PLUG	$4.79	3682	533	$2,553.07	158	356	563	#NUM!	$2,696.77	350	$1,676.50
011883909	HOSE,PREFORMED	$3.89	14	18	$70.02	16	10	3	0.982667904	$11.67	2	$7.78
011887438	STARTER,ENGINE,ELEC	$275.00	5	1	$275.00		5	1	0.952012263	$275.00	1	$275.00
011887859		$255.00		4	$1,020.00	2		0	1	$ -	0	$ -
011890494	SWITCH,PRESSURE	$9.97	2	10	$99.70	9	2	1	0.99120316	$9.97	1	$9.97
011892195	TIE ROD END,STEERIN	$30.82	48	18	$554.76	13	26	8	0.992849063	$246.56	6	$184.92
011903579	FILTER ELEMENT,FLUI	$7.38	135	70	$516.60	63	34	21	0.999687313	$154.98	13	$85.94
011906175	ELECTRONIC COMPONE	$7,286.00		5	$36,430.00	2	2	1	0.99120316	$7,286.00	1	$7,286.00
011908413	WYE,QUICK DISCONNEC	$24.81	2	1	$24.81		2	1	0.99120316	$24.81	1	$24.81
011908528	THUMBSCREW	$2.55	21	2	$5.10		7	4	0.983317653	$10.20	3	$7.65
011918741	PARTS KIT,DUST BOOT	$7.23	28	20	$144.60	14	14	5	0.985358864	$36.15	4	$28.92
011932711	RETAINER,BOW,VEHICU	$3.39	3	3	$10.17		3	1	0.981089752	$3.39	1	$3.39
011937175	RELAY,SOLID STATE	$32.41	11	2	$64.82		7	2	0.957628069	$64.82	2	$64.82
011946588	TRANSMITTER,ENGINE	$9.06	11	7	$63.42	5	6	2	0.957628069	$18.12	2	$18.12
011956637	LIGHT,DOME	$181.00	3	1	$181.00		3	1	0.981089752	$181.00	1	$181.00
011994716	ELECTRONIC CONTROL	$8,279.00	2	4	$33,116.00	3	2	1	0.99120316	$8,279.00	1	$8,279.00
011972160	TIE ROD END,STEERIN	$30.82	41	14	$431.48	8	24	7	0.991072871	$215.74	5	$154.10
011980633	PULLEY,GROOVE	$12.58	7	18	$228.44	12	7	2	0.986643424	$25.16	1	$12.58
011992391	REGULATOR,ENGINE GE	$362.32	4	5	$1,811.60	2	4	1	0.967872109	$362.32	1	$362.32
012010814		$1,664.00		3	$4,992.00	2		0	1	$ -	0	$ -
012035746	SPINDLE,WHEEL,DRIVI	$382.00	7	9	$3,438.00	4	7	2	0.986643424	$764.00	2	$382.00
012036551	SEAL,NONMETALLIC SP	$7.74	58	39	$301.86	37	9	9	0.991493796	$69.66	7	$54.18
012042605	SEAL,NONMETALLIC SP	$5.66	11	28	$158.48	27	9	2	0.957628069	$11.32	2	$11.32
012045765	POWER CONTROL UNIT	$10,963.00		3	$32,889.00		4	1	0.967872109	$10,963.00	1	$10,963.00
012049984	CONTROL HANDLE,ASSE	$2,157.00	2	1	$2,157.00	2	2	1	0.99120316	$2,157.00	1	$2,157.00
012077174	CONTROL ASSEMBLY,PU	$70.99	1	3	$212.97		1	1	0.997697513	$70.99	1	$70.99
012106202	GAS SPRING,DOOR,VEH	$62.21	3	3	$186.63		2	1	0.981089752	$62.21	1	$62.21
012108826	PULLEY ASSEMBLY,GRO	$31.34	2	5	$156.70	3	1	1	0.99120316	$31.34	1	$31.34
012121057		$45.65		1	$45.65			0		$ -	0	$ -
012142640		$855.00		7	$5,985.00			0	1	$ -	0	$ -
012142647	SWITCH ASSEMBLY	$197.34	7	9	$1,381.38	4	6	2	0.986643424	$394.68	1	$197.34
012164507	GEAR SET,SPUR,MATCH	$757.00	1	4	$3,028.00	2	1	1	0.997697513	$757.00	1	$757.00
012182199	SWITCH BOX	$1,224.00		1	$1,224.00		2	1	0.99120316	$1,224.00	1	$1,224.00
012228007	ARM ASSEMBLY,PIVOT	$386.00	2	10	$3,860.00	4	2	1	0.99120316	$386.00	1	$386.00
012264601	REGULATOR,ENGINE GE	$263.76	2	8	$2,110.08	3	2	1	0.99120316	$263.76	1	$263.76
012300265	SWITCH,SENSITIVE	$132.89	1	6	$797.34		1	1	0.997697513	$132.89	1	$132.89
012331135		$845.00		3	$2,535.00			0		$ -	0	$ -
012339143	FILTER-SEPARATOR,LI	$182.97	1	3	$548.91	2	1	1	0.997697513	$182.97	1	$182.97
012410438		$917.00		4	$3,668.00	2		0		$ -	0	$ -
012445773	PARTS KIT,SEAL REPL	$169.18	4	2	$338.36		3	1	0.967872109	$169.18	1	$169.18
012461872		$18,072.00		4	$72,288.00	3		0		$ -	0	$ -
012461873	ELECTRONIC UNIT,THE	$11,581.00	1	1	$11,581.00		1	1	0.997697513	$11,581.00	1	$11,581.00
012468273	EYECUP	$7.85	60	22	$172.70	17	2	10	0.993161113	$78.50	7	$54.95
012477966	BRAKE SHOE	$152.00	23	13	$1,976.00	12	11	4	0.976470545	$608.00	3	$456.00
012493492	SWITCH,SAFETY,NEUTR	$19.54	1	8	$156.32	5	1	1	0.997697513	$19.54	1	$19.54

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
012529712	SPACER,HUB,TRACK SU	145.65	5	7	1,019.55	2		1	0.952012263	145.65	1	145.65
012532825	DISK BRAKE SHOE	7.15	17	37	264.55	28	5	3	0.967893141	21.45	3	21.45
012550889	REGULATOR,VOLTAGE	842.00	3	4	3,368.00		3	1	0.981089752	842.00	1	842.00
012553347	PARTS KIT,HULL SEMI	334.59	30	12	4,015.08	10	24	5	0.980237580	1,872.95	4	1,338.36
012577706	BRACKET,ENGINE ACCE	40.65	7	7	284.55	6	7	2	0.986643424	81.30	1	40.65
012518124	GENERATOR,ENGINE AC	6,910.00	6	4	27,640.00		6	1	0.933924226	6,910.00	1	6,910.00
012829517	LUBRICANT,RUN FLAT	3.82	98	28	106.96	27	5	15	0.998169577	57.30	10	38.20
012646542	GENERATOR,ENGINE AC	1,098.00	11	5	5,490.00	3	11	2	0.957628069	2,196.00	2	2,196.00
012663998		1,762.00		1	1,762.00			0		-	0	-
012707498	PARTS KIT,STEERING	98.45	10	3	295.35		10	2	0.966530835	196.90	2	196.90
012748998		759.22		5	3,796.10			0	1	-	0	-
012776733	STARTER,ENGINE,GAS	753.00	12	3	2,259.00		12	2	0.947665538	1,506.00	2	1,506.00
012770085	SOLENOID,ELECTRICAL	671.00	5	3	2,013.00		3	1	0.952012263	671.00	1	671.00
012805477		78.46		6	470.76	4		0	1	-	0	-
012811509	CABLE ASSEMBLY,SPEC	396.33	1	4	1,585.32		1	1	0.997697513	396.33	1	396.33
012815221	BRAKE SHOE SET	43.66	12	13	567.58	8	12	2	0.947665538	87.32	2	87.32
012826968	BELTS,V,MATCHED SET	13.37	34	44	588.28	24	28	6	0.989315279	80.22	4	53.48
012865700	RELAY ASSEMBLY	766.00	1	1	766.00		1	1	0.997697513	766.00	1	766.00
012865685		454.00		3	1,362.00			0	1	-	0	-
012882824	WIRING HARNESS,BRAN	1,006.27	3	5	5,031.35	4	3	1	0.981089752	1,006.27	1	1,006.27
012885240	INSTALLATION AND EQ	9.45	20	24	226.80	17	7	4	0.986180769	37.80	3	28.35
012898249		82.31		1	82.31			0	1	-	0	-
012901738		15.53		1	15.53			0		-	0	-
012915893	FILTER ELEMENT,INTA	154.25	47	6	925.50	5	36	8	0.993540951	1,234.00	8	925.50
012916607	WIRING HARNESS,BRAN	604.00	4	1	604.00		4	1	0.967872109	604.00	1	604.00
012926532	CONTROL,REMOTE SWIT	182.00	56	14	2,548.00		46	9	0.993238881	1,638.00	6	1,092.00
012937131	FUEL CONTROL,MAIN,T	12,383.00	5	1	12,383.00		5	1	0.952012263	12,383.00	1	12,383.00
013088490	PANEL,POWER DISTRIB	1,812.00	1	1	1,812.00		1	1	0.997697513	1,812.00	1	1,812.00
013049943		3,053.00		1	3,053.00			0	1	-	0	-
013102237	WHEEL,SOLID RUBBER	127.00	3	9	1,143.00	8	2	1	0.981089752	127.00	1	127.00
013124730	SHOCK ABSORBER,DIRE	526.00	4	8	4,208.00	3	4	1	0.967872109	526.00	1	526.00
013144470	STEERING GEAR	163.36	16	4	653.44	2	16	3	0.973429836	490.08	3	490.08
013153060		1,016.00		1	1,016.00			0	1	-	0	-
013172366		867.00		7	6,069.00	2		0	1	-	0	-
013179147	CHUTE,EJECTION	282.00	2	2	564.00		2	1	0.99120316	282.00	1	282.00
013242219		1,283.00		3	3,849.00			0	1	-	0	-
013316486	CONTROL ASSEMBLY,PU	60.98	9	5	304.90		9	2	0.974343069	121.96	2	121.96
013337632	TIRE,PNEUMATIC	206.00	44	12	2,472.00	8	28	7	0.966850204	1,442.00	5	1,030.00
013363521	NUT,PLAIN,ROUND	0.93	9	9	8.37		9	2	0.974343069	1.86	1	1.86
013308241	SCREW,MACHINE	1.22	11	41	50.02	23	10	2	0.957628069	2.44	2	2.44
013399543	CYLINDER ASSEMBLY,A	607.00	2	4	2,428.00	4	2	1	0.99120316	607.00	1	607.00
013414647	PUMP,FUEL,ELECTRICA	356.00	11	9	3,204.00	2	11	2	0.957628069	712.00	2	712.00
013440469	DISTRIBUTION BOX	15,037.00	1	3	45,111.00		1	1	0.997697513	15,037.00	1	15,037.00
013458887	TENSION DEVICE,TRAC	873.00	3	4	3,492.00		3	1	0.981089752	873.00	1	873.00
013458888		661.00		6	3,966.00			0		-	0	-
013582102	BALL JOINT	28.63	3	2	57.28	2	3	1	0.981089752	28.63	1	28.63
013688586		2,378.00		3	7,134.00			0		-	0	-
013720720	COMPUTER,FIRE CONTR	18,847.00	3	5	94,235.00	3	3	1	0.981089752	18,847.00	1	18,847.00
013805865	CHUTE,EJECTION	264.00	4	2	528.00		4	1	0.967872109	264.00	1	264.00
013823218		680.00		1	680.00			0		-	0	-
013823221	CONTROL,INDICATOR	1,910.00	2	1	1,910.00		2	1	0.99120316	1,910.00	1	1,910.00
013823222		184.00		5	920.00			0		-	0	-
013628728	PARTS KIT,CONSTANT	179.67	3	1	179.67		3	1	0.981089752	179.67	1	179.67
013928874	PARTS KIT,CONSTANT	175.89	3	1	175.89		2	1	0.981089752	175.89	1	175.89
013832387		166.90		1	166.90			0		-	0	-
013884046		175.00		2	350.00			0		-	0	-
013901969	BATTERY,STORAGE	53.16	57	184	9,781.44	180	30	9	0.992404859	478.44	7	372.12
013933723	WIRING HARNESS,BRAN	3,439.00	2	2	6,876.00			1	0.997697513	3,439.00	1	3,439.00
013959585	CONTROL,REMOTE SWIT	182.00	26	10	1,820.00		24	4	0.983190298	728.00	4	728.00
013977544		874.00		2	1,748.00			0		-	0	-
014069209	FILTER ELEMENT,INTA	198.00	24	21	4,158.00	15	8	4	0.972456743	792.00	3	594.00
014131366	PARTS KIT,BALL JOIN	34.74	16	19	660.06	12	11	3	0.973429836	104.22	2	69.48
014160888		1,860.00		1	1,860.00			0		-	0	-
014185535	CUSHION,EAR	67.76	1	8	542.08		1	1	0.997697513	67.76	1	67.76
014198196		789.00		1	789.00			0		-	0	-
018920068				1				0		-	0	-
121790165		307.00		3	921.00			0	1	-	0	-
121799627	SPRING,HELICAL,COMP	1.07	3	2	2.14		2	1	0.981089752	1.07	1	1.07

NIIN	Nomenclature	Price	Annual Demand	Current Stockage	Investment With PLL	ASL RO	# of Demands	Consolidated Stockage	SL@25 OST	Investment Consolidated	Consolidation SL>90%	Investment SL>90%
121690271		$ 345.00		1	$ 345.00			0	1	$ -	0	$ -
121690284	SPRING,HELCIAL,COMP	$ 0.82	10	8	$ 6.56		9	2	0.966530835	$ 1.64	2	$ 1.64
121922722	PIN,FIRING	$ 11.13	1	11	$ 122.43		1	1	0.997897513	$ 11.13	1	$ 11.13
Total Inventory Value					$ 1,168,239.93					$ 268,085.96		$ 240,653.77
Depth of Inventoy				7971				2419			1629	
Range of Inventory				481				362			362	
Average Service Level				98%				96%			95%	
								Sensitivity Analysis				

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